Order Nr. A2W-SPX-130305-021

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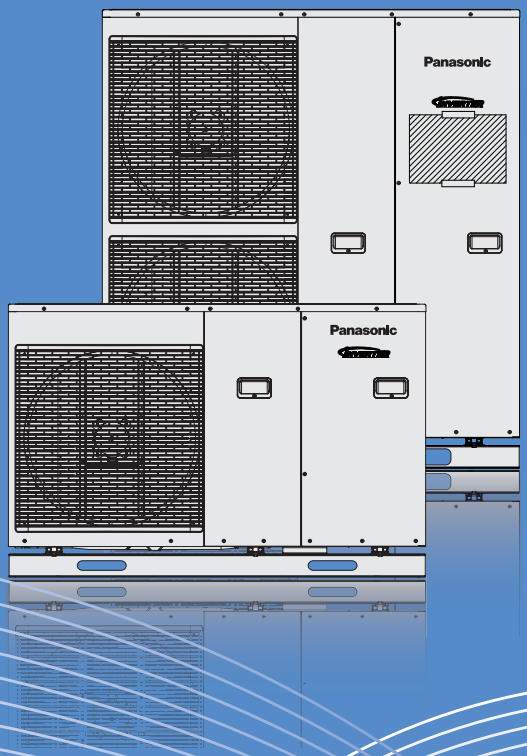
Aquarea Air/Water Heat Pump – Heating and Cooling Systems 2013



INSTALLATION MANUAL

for Compact Systems

Service

For any questions on

Commissioning

Malfunctions

Technical support

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1 Introduction

1.1 About this manual

This manual provides you with information on simple and correct mounting, as well as hydraulic and electric installation.

Ensure that you have read and understood the installation and safety instructions in this manual before you start work. Incorrect installation due to a failure to follow instructions in this manual, or insufficient compliance with the instructions, can result in damage.

If you are unsure about the installation, please contact our service team for clarification: **01344 853182.**

1.2 Target audience

This manual is intended for qualified installation engineers and electricians. It is not intended for unqualified persons.

Electrical and plumbing installation work must be performed by a qualified electrician or plumber.

1.3 Products covered

This manual covers the following Aquarea heat pump systems:

Aquarea LT	WH-MDF06E3E5*, WH-MDF09E3E5*, WH-MDF09C3E5, WH-MDC09C3E5, WH-MDF09C3E8, WH-MDC09C3E8, WH-MDF12C6E5, WH-MDC12C6E5, WH-MDF12C9E8, WH-MDC12C9E8, WH-MDF14C6E5, WH-MDC14C6E5, WH-MDF14C9E8, WH-MDC14C9E8, WH-MDF16C6E5, WH-MDC16C6E5, WH-MDF16C9E8, WH-MDC16C9E8
Aquarea T-CAP	WH-MXF09D3E5, WH-MXC09D3E5, WH-MXF09D3E8, WH-MXC09D3E8, WH-MXF12D6E5, WH-MXC12D6E5, WH-MXF12D9E8, WH-MXC12D9E8
Aquarea HT	WH-MHF09D3E5, WH-MHF09D3E8, WH-MHF12D6E5, WH-MHF12D9E8

* Devices have a high efficiency pump and fulfill the criteria of the Ecodesign Directive valid from 2015 for energy related products (ErP)

1.4 Symbols used

The warnings in this manual absolutely must be heeded, as they are safety-critical. The symbols have the following meanings:

Danger! Danger of fatal injury from electric shock if not observed

Danger! Danger of fatal injury or damage to health if not observed

Warning! Material damage if not observed

NOTE Further information

➤ Identification of a step

1.5 Tools required

We recommend that you use the following tools:

- Phillips-head screwdriver
- Spirit level
- Electric drill
- Set of spanners
- Knife
- Tape measure
- Multimeter
- Torque wrench, 39.2 Nm
- Torque wrench, 58.8 Nm
- Gas leak detector

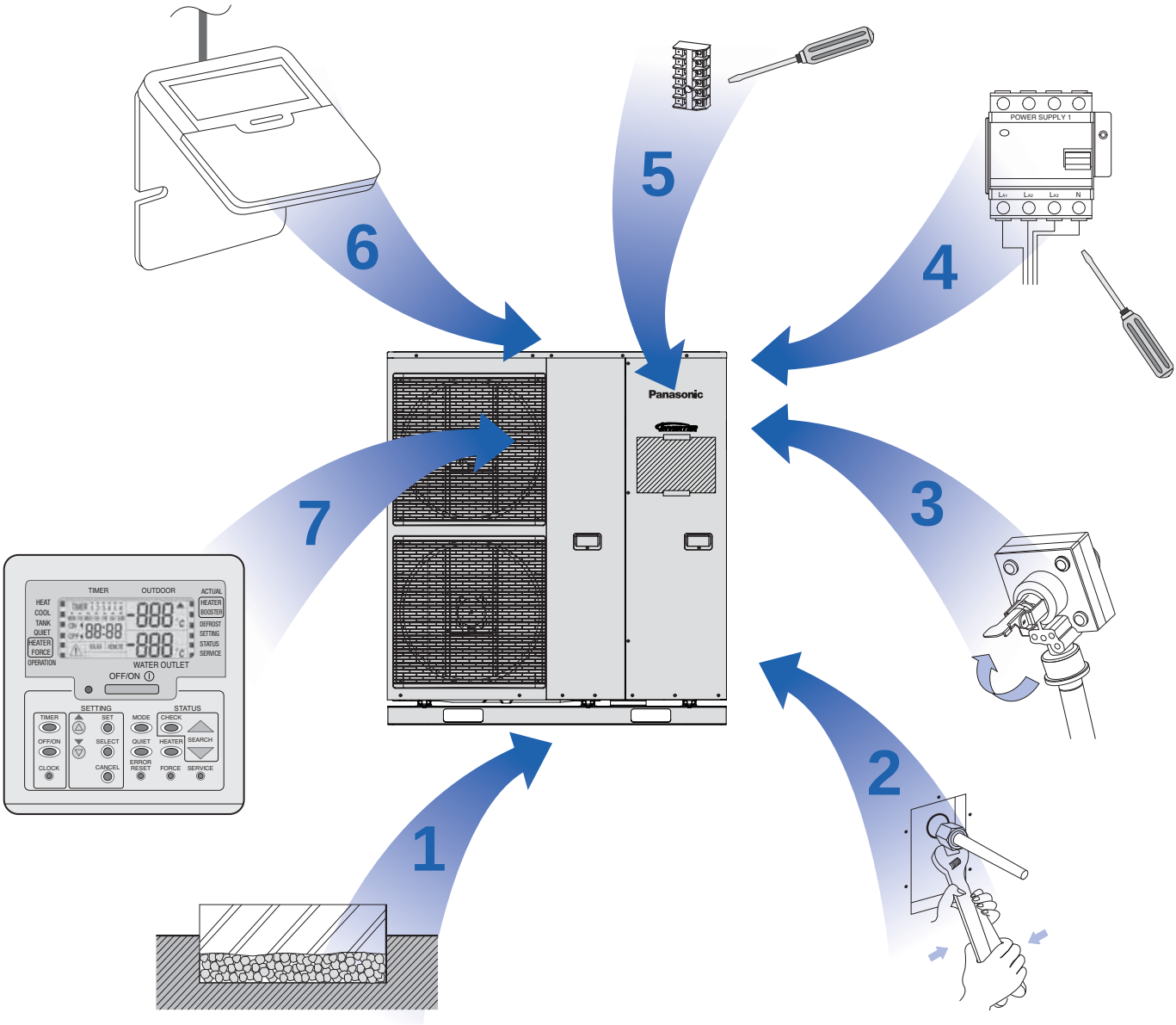
1.6 To be provided by customer

The following components must be provided by the customer:

- 2-way directional valve set
- 3-way directional valve set
- Analogue room thermostat (e.g. RAA20 Siemens) or programmable room thermostat (e.g. REV200 Siemens)
- Anchoring to prevent tipping over
- Dirt trap (mesh width at least 500 to 600 μm)
- Propylene glycol antifreeze mixture
- Flush-mounted box for fitting the wired remote control
- Heating circuit mixer closed-loop control
- Dew point monitor
- Device for draining the system
- Insulation for pipelines

1.7 Installation sequence

This installation manual is written so that the sequence of sections corresponds to the sequence of installation steps to be performed. These are primarily as follows:



No.	Installation step	Section no.
1	Installing the device	4
2	Connecting the water pipes	6
3	Filling and venting the system	6
4	Connecting the device to the electricity mains	7.1
5	Connecting inputs and outputs (interfaces)	7.2
6	Installing the wired remote control	7.3
7	Commissioning	8

2 Safety instructions

2.1 General hazard instructions for avoiding electric shocks

Danger!

Observe and comply with the following hazard instructions.
If you fail to do so, there is a danger of electric shock or fire.

- Only qualified electricians may perform the electrical installation work.
- All service and maintenance work must also be performed by a certified electrician or an authorised dealer.
- Keep children and persons who are unfamiliar with the system clear of the working area.
- When working on the device, comply with the national and local standards and regulations.
- The cables and electricity connections, including existing connections, must be suitable for the electrical capacity of the heat pump.
- Do not use non-approved mains cables, modified cables or extension cables to connect to the electricity mains.
- The device must be earthed correctly. It may not be earthed to gas or water pipes, lightning conductors or the earthing of the telephone system.
- Comply with the respective national wiring rules and safety precautions for fault current. Panasonic recommends that you use a RCD.

2.2 General hazard instructions to avoid damage to health

Danger!

Observe and comply with the following hazard instructions. If you fail to do so, there is a risk of fatal injury or damage to health.

- The refrigerant can cause freezing if it comes in contact with skin.
- Only use the refrigerant specified. The refrigerant may not be mixed with other types of refrigerant or replaced with other types of refrigerant. Using other refrigerants can damage the device and result in safety problems. The manufacturer accepts no responsibility or warranty if refrigerants of types other than R410A are used for the Aquarea LT series and T-CAP or R407C for the Aquarea HT series.

- Only use the device in sealed systems. Use in an open-vented system can result in excessive corrosion of the water pipes and increase the risk of bacteria colonies forming in the water, legionella in particular.
- Do not install the device in locations where leaks of flammable gases can occur. Otherwise there is a risk of fire or explosions.

2.3 General hazard instructions for avoiding material damage

Warning!

Observe and comply with the following instructions. If you do not, there is a risk of material damage, e.g. via vibration, water leaks or fire.

- All installation work for the water circuit must comply with all relevant European and national regulations (including EN 61770).
- The compact unit is only intended for external installation and may not be installed indoors.
- Use only enclosed or specified parts.
- If the compact unit is to be installed close to the sea, in highly sulphurous regions or regions with high oil-contents (e.g. machine oil etc.), its service life may be reduced.

2.4 General further information

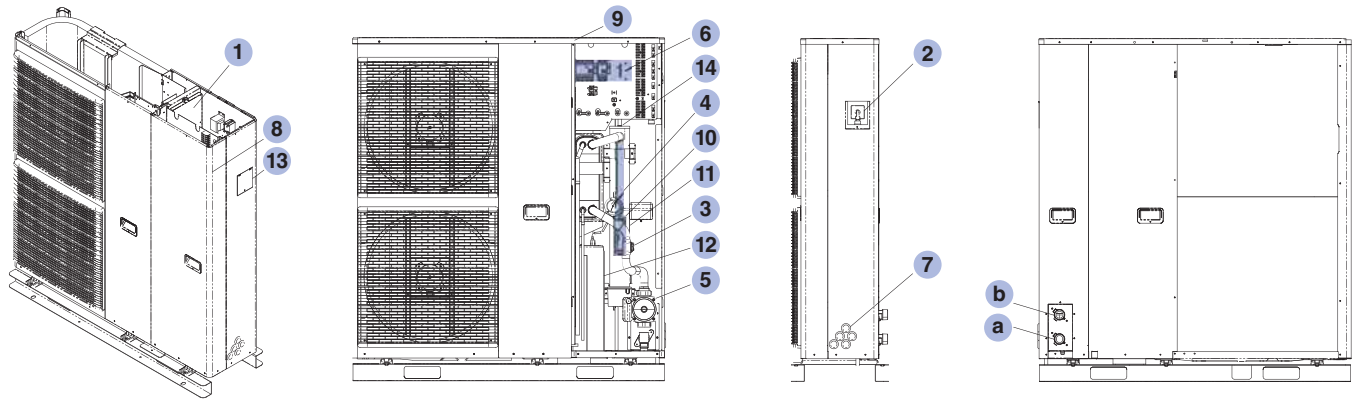
NOTE

The following information provides recommendations or advanced assistance.

- Air/water heat pumps require planning permission in Wales and Northern Ireland and must meet certain criteria in England and Scotland to be classed as a permitted development. If in doubt, check with your local planning office.
- For details on preventing water pipes freezing and heat and cold protection, see the WRAS guidelines and BS EN 806 and BS 6700.
- The design handbook for split systems and compact systems contains further information on the device.

3 Device overview

3.1 Components



Component name

1. Electronic circuit board (view without upper cabinet panel)
2. Pressure relief valve (view without cover)
3. Flow rate cut-out
4. Manometer
5. 3-phase water recirculation pump (Figure shows standard pump)
6. RCD (differs from model to model)
7. Cable gland
8. Front panel
9. Upper cabinet panel
10. Temperature limit switch (differs from model to model)
11. Additional electric heater (3, 6 or 9 kW)
12. Expansion tank
13. Cover
14. Quick vent

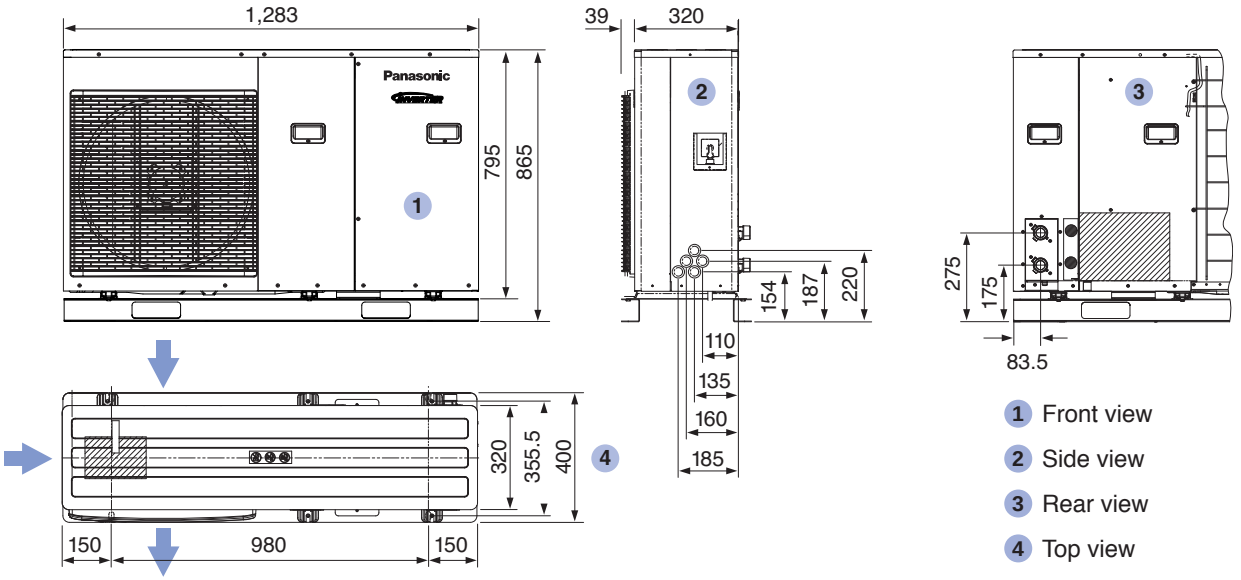
Connection name

- a Water return Ø R 1¼
- b Water supply Ø R 1¼

Components of the compact unit with two fans

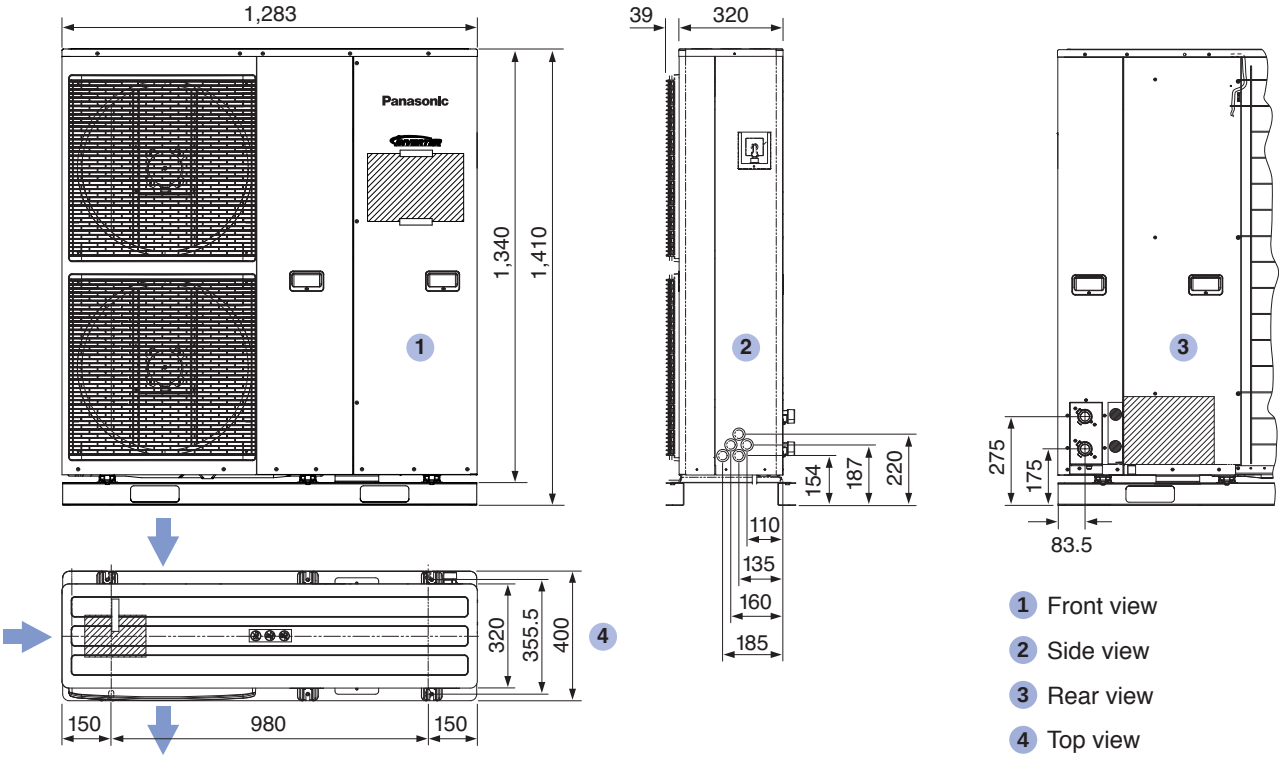
3.2 Dimensions diagram

3.2.1 Mini compact unit with a nominal output of 6 to 9 kW



Dimensions of compact unit with one fan in mm. The air flow is indicated by arrows.

3.2.2 Compact unit with a nominal output of 9 to 16 kW



Dimensions of compact unit with two fans in mm. The air flow is indicated by arrows.

3.3 Accessories

No.	Component	Quantity	Comments	Included
1	Drain elbow	1		×
2	Cable ties	3		×
3	Cable bush	2		×
4	Wired remote control	1		×
5	Add-on circuit board for solar thermal connection CZ-NS2P	1	Add-on circuit board for solar thermal connection (compact systems)	
6	Add-on circuit board for solar thermal connection CZ-NS2P	1	Add-on circuit board for solar thermal connection (mini compact systems)	
7	Hot-water tank WH-TD20B3E5 200 litres WH-TD20B3E5 300 litres	1	Stainless steel tank	
8	Hot-water tank HR 200 200 litres HR 300 300 litres	1	Enamelled	
9	Hot-water tank HR 300 300 litres HR 500 500 litres	1	Enamelled	
10	Temperature sensor installation set **CZ-TK1** for third party tanks	1	Sensor with cable and immersion sleeve for installation in third party tanks	
11	Additional casing heater unit **CZ-NE1P** for series: Aquarea T-CAP, Aquarea HT, Aquarea LT series mini compact units	1	Heating band attached on the floor plate inside the unit's casing to prevent the water incurred during defrosting from freezing	

4 Location / Installing the device

4.1 Location

Weights of the compact units

Aquarea LT single-phase (one fan)	112 kg
Aquarea LT single-phase	153 kg
Aquarea LT three-phase	157 kg
Aquarea T-CAP single-phase	155 kg
Aquarea T-CAP three-phase	158 kg
Aquarea HT	n. a.

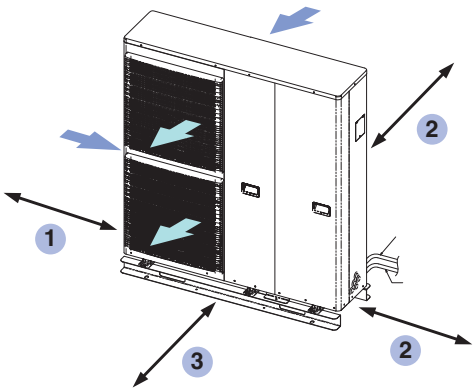
The installation location must meet the following criteria:

General

- Even and horizontal
- Load-bearing (see device weight table)
- No outside temperature under -20 °C
- Installation at a height sufficient to protect against weather influences such as snow or water levels
- The height difference of the liquid system circuit may not exceed 7 m
- Easy access for maintenance work
- Condensate must drain away easily
- No damage to other objects if water leaks
- If a solar installation is connected, the connection cable between the solar pump station and the compact unit may not be longer than 10 metres

Minimum clearances

- The minimum clearances (see Figure) must be observed.

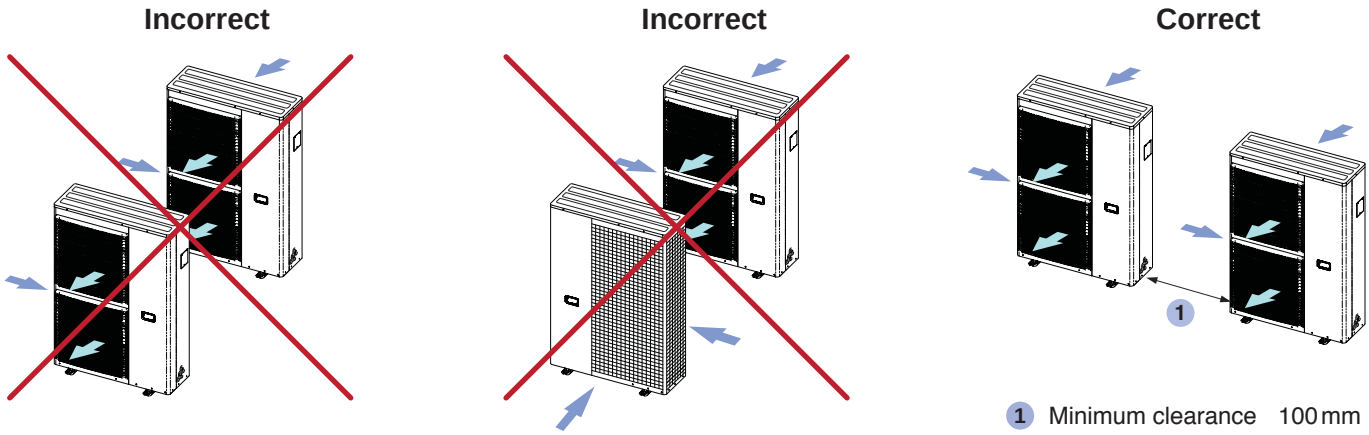


1 Minimum clearance 100 mm
2 Minimum clearance 300 mm
3 Minimum clearance 1,000 mm

Minimum clearances of the compact unit to adjacent walls and objects, indicating the air flow direction.

Air circulation

- In general, choose an installation location with good air circulation
- No additional guards such as awnings etc.
- No sources of heat or steam nearby
- No objects nearby which could short circuit the exhaust air
- No direct wind impact on the suction side of the unit
- If multiple units are used, observe the minimum clearance between units



Correct alignment of multiple external or compact units

Note
The design handbook for split systems and compact systems contains further information on soundproofing.

Soundproofing

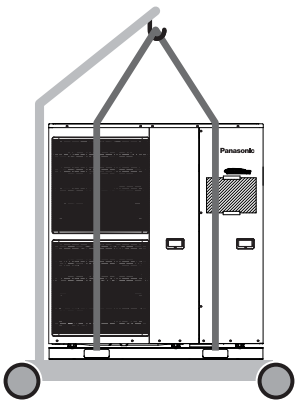
- The operating noise of the compact unit must not bother the user or neighbours.
- The compact unit sound output direction should face the street side if possible, as neighbouring rooms which require protection seldom face in this direction.

4.2 Installation

Danger!

At least four persons are required for installation work. Otherwise, the weight of the device can lead to injuries.

Transport and lifting equipment must be suitable for the device weight.

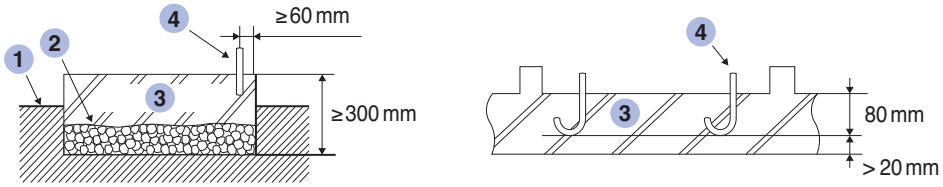


If possible, the device should only be moved with the appropriate transport and lifting equipment. The lifting equipment can be attached to the base structure of the device using lugs.

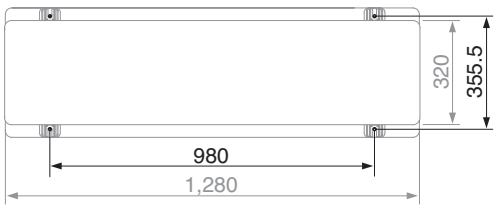
- ➤ Transport the device to the planned installation location.
- ➤ Remove the packaging carefully.
- ➤ Fasten the device with four M12 anchor bolts (tightening force >15,000 N)

Transport the device carefully to avoid damage. That includes placing / lowering the device in the installation location.

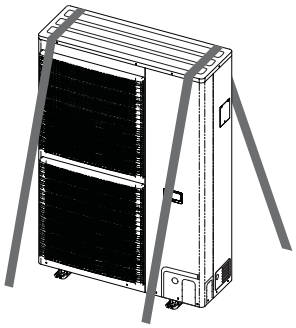
1. Floor
2. Stone / gravel
3. Concrete or floor plate
4. Anchor bolt



Minimum requirements for anchoring the compact unit to the floor or a foundation (left) or directly to a base plate (right)



Compact unit drilling template



For installation locations which can be impacted by strong winds, e.g. wind between buildings, including building roofs, the compact unit must be secured on-site with additional anchoring to prevent it toppling over.

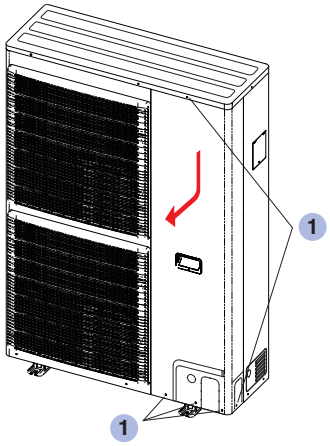
Protection against toppling over via anchoring

5 Opening the device

Danger!

The work may only be performed by qualified or certified personnel.

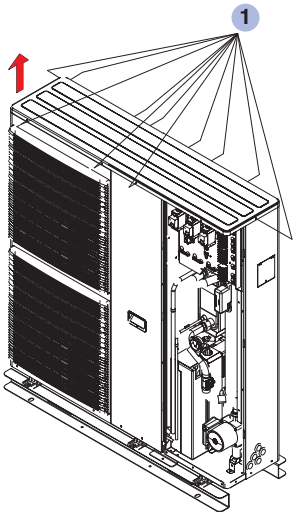
Ensure that the device is disconnected from the power supply before you perform the steps listed below.



1 Fastening screws

Remove the front panel

- Remove the 5 fastening screws
- Push the front panel of the cabinet downwards to release the safety catches.
- Pull the front panel forwards to remove it.



1 Fastening screws

Removing the upper cabinet panel

- Remove the 11 fastening screws.
- Lift the upper cabinet panel from the device.

Reverse the steps accordingly to close the device.

6 Hydraulic installation

Danger!

The work can only be performed by qualified or certified personnel.

Follow these instructions to prevent damage to the compact unit and the other components of the system:

- Flush the pipelines before connecting the device, to remove impurities. Impurities can damage the components of the device.
- Ensure that the components installed in the wet circuit can withstand high operating water pressures. Use only suitable sealants which can withstand the pressure and temperature of the system.
- Never use worn pipes.
- Do not use a pipe wrench to mount the connections. Use two adjustable wrenches to tighten the connection.

Warning!

There must be at least 50 litres (for 12.0 to 16.0 kW devices) or 30 litres (for 6 to 9.0 kW devices) of liquid in the system. If these values are not reached, an additional storage tank must be installed.

The standard expansion tank can be used for heating systems with a total water quantity in the system of less than 200 litres (without a hot-water tank) and a static system height of no more than 7 metres (difference of the highest point of the system to the expansion tank).

If the total water quantity is greater than 200 litres or greater static heights are required, pressure retention must be ensured via an expansion tank to be installed by the customer. In general, the pressure level of the pressure relief valve must be observed. See the technical details for the pressure level, to a maximum of 3 bar.

Aquarea heat pumps may only be installed as sealed systems without direct contact of the heating water to the ambient air.

NOTE

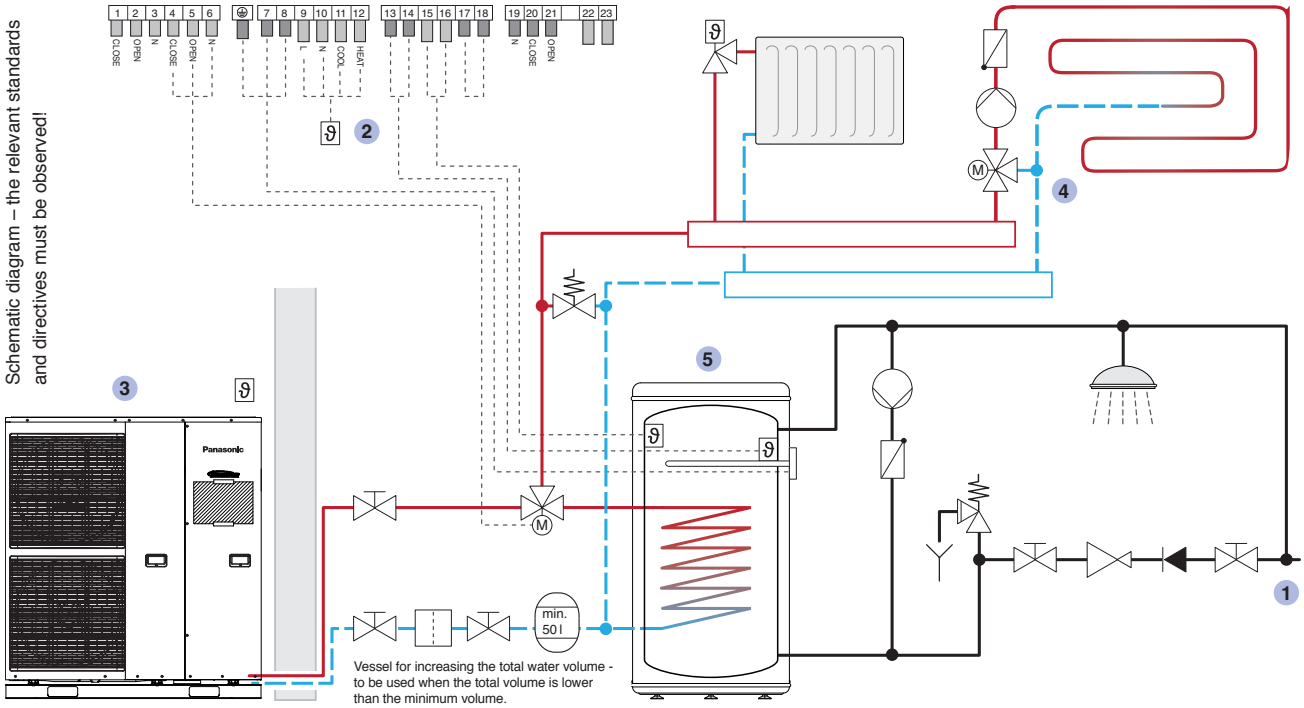
The compact units feature an expansion tank as standard (approx. 10 litres of air capacity, initial pressure of 1 bar). By contrast, the mini compact units WH-MDF06E3E5 and WH-MDF09E3E5 with heating capacities of 6 and 9 kW have an expansion tank with only 6 litres of volume. Accordingly, these devices can only be used for heating systems with a total water quantity in the system of under 150 litres.

See the design handbook for split systems and compact systems for connection variants.

Description of the functions of the sample hydraulic installation with water heating and heating

The hot-water tank 5 is supplied with heat as an alternative to the heating circuits. For this purpose, the heat pump controller opens the three-way directional valve towards the hot-water tank. Then, the hot-water tank is charged to the target temperature with appropriate supply temperature.

In heating mode, the heat pump controller opens the three-way directional valve towards the heating circuits and supplies them with heat. The supply temperature is controlled based on the outside temperature 3 and corresponds to the required temperature of the hottest heating circuit for mixed heating circuits. Heating circuits with lower supply temperatures must be adjusted to the right temperature using heating circuit mixers 4 (to be provided by the customer) by adding return heating water. A room thermostat 2 (to be provided by customer) deactivates heating mode of the heat pump when it reaches the target room temperature and prevents further activation and deactivation of the heat pump. An overflow valve between the supply and return pipes ensures that the minimum volume flow of the heat pump is guaranteed, even with thermostatic radiator valves and heating circuit mixers.



1 Cold water connection
2 Room thermostat
3 Outside temperature sensor (integrated in outdoor unit)
4 Heating circuit mixer closed-loop control (to be provided by customer)
5 Hot-water tank WH-TD20B3E5

Sample hydraulic installation with water heating and heating system (see Aquarea design handbook for other examples)

Legend

	3-way directional valve/ 3-way mixer
	Drain funnel
	Shutoff valve
	Pressure-reducing valve
min. 50 l	Storage tank for minimum volume

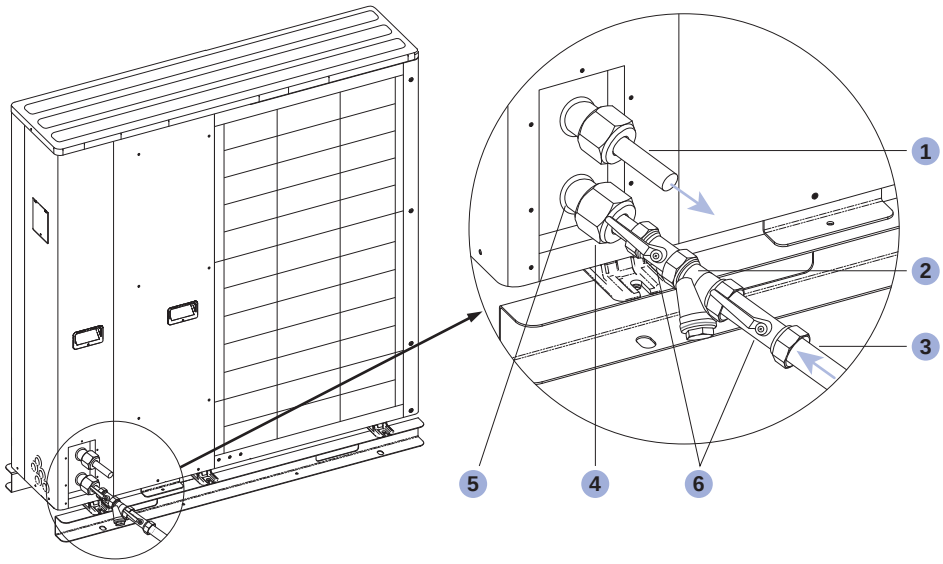
	Manometer
	Pump
	Non-return valve
	Dirt trap
	Pressure relief valve
	Temperature sensor

	Thermostatic radiator valve/ Single room controller valve
	Overflow valve
	Water tapping point
	Return
	Supply
	Control wire

➤ Open the compact unit as described in Section 5.

➤ Install the pipes, valves, dirt trap and other components in accordance with the design documents.

1 Water supply WATER OUT
2 Dirt trap
3 Water return WATER IN
4 Union nut
5 Connection
6 Shutoff valve



Position of the dirt trap

⚠ Warning!
Hydraulic decoupling between the heat pump circuit and heat emitter circuit is always required when using Aquarea heat pumps with high efficiency pumps – overflow valves may not be used.

➤ Install a dirt trap (to be provided by the customer) upstream of the water inlet (water return) of the compact unit (grid width at least 500 to 600 µm) to protect the heat pump. We recommend installing a shutoff valve upstream and downstream of the dirt trap, to make subsequent maintenance work on the dirt trap easier.

➤ Install an overflow valve if no hydraulic decoupling (e.g. hydraulic switch or storage tank) is planned. Ensure that the overflow valve is not designed for the minimum volume flow, but for the nominal volume flow of the respective heat pump.

⚠ Warning!
In cooling mode, humid air can condense on the surface of the heat transfer systems if the temperature drops below the dew point. This can damage the building or make the floor slippery. As a result, you must install suitable positioned dew point sensors to ensure that temperatures lower than the dew point do not occur or drain any condensate which forms reliably. In addition, the pipelines affected must be insulated impermeably.

➤ If a heat pump with a cooling function is used, install a 2-way directional valve to deactivate the heating circuits in cooling mode, where applicable.

➤ Install the 3-way directional valve (to be provided by the customer) to switch from heating mode to water heating mode and vice versa. As standard, the valve should be open towards the heating circuit (contacts 4 and 6 are closed). The valve must also be CE compliant and may not exceed the peak load of 12 VA.

➤ Use Rp 1¼" nuts to connect the water inlet (labelled WATER IN) and water outlet (labelled WATER OUT). Use a torque wrench to tighten it, and apply the correct torque: 117.6 Nm .

➤ Close the supply (water outlet) and return (water inlet) of the compact unit at the heat exchanger of the hot-water tank. Ensure that you do not confuse the connections (supply = top, return = bottom).

➤ Install a device for draining the system (to be provided by the customer).

➤ Insulate the pipes in accordance with the latest UK building regulations, although the below is recommended:

Type of pipes/Fittings	Minimum thickness of insulation layer
Internal diameter up to 22 mm	40 mm
Internal diameter from 22 mm to 35 mm	60 mm
Internal diameter from 35 mm to 100 mm	2 × internal diameter

Recommended thermal insulation of heat distribution and hot water pipes

⚠ Warning!
In compact systems, there is a risk of freezing if the heating circuit is filled with water and the outside temperature falls below 0°C. That can cause significant damage to the device.

The customer is responsible for ensuring that the device does not freeze. Please use one of the following options to do so:

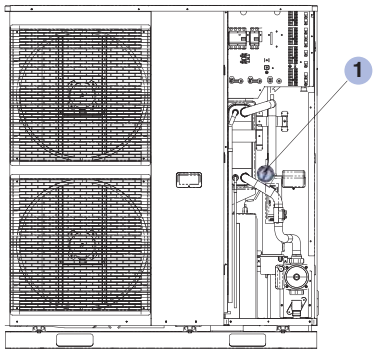
- The heating circuit is operated with a food safe antifreeze mixture (40 % propylene glycol mixture) for temperatures down to -20 °C)
- An additional heater unit in the compact unit prevents the heating circuit freezing.
- The heating circuit is drained by a system to be provided by the customer (manual or automatic).

⚠ Warning!
To prevent damage to the heat pump from lime scale, please consult BS 7593 “Code of practice for treatment of water in domestic hot water central heating systems”.

➤ Fill the system as follows:

➤ Open all thermostatic radiator valves of the heating system, and all other shutoff valves where applicable.

➤ Connect a filling hose (evacuated if possible) to the system.

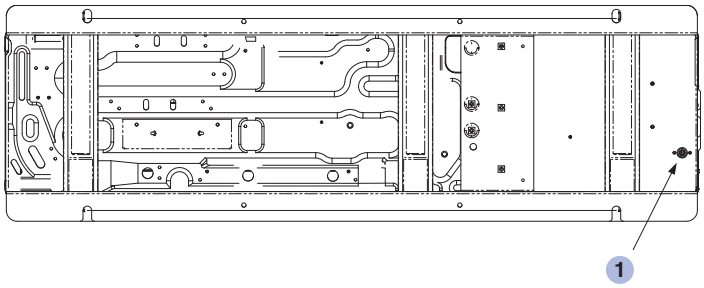


1 Manometer

➤ Keep adding water or antifreeze mix until the manometer reaches the nominal pressure.

➤ Vent the system (see the Commissioning section). Then check the pressure again and add liquid if necessary

1 Connecting the drain hose



⚠ Warning!
If the device is used in areas where the temperature can remain below zero for 2 to 3 days, condensate pipes should not be used, as the condensate could freeze, which can cause malfunctions.

➤ Proceed as follows to install a condensate pipe to drain condensate formed in the compact unit during operation:

- ➤ Use a drain hose with an internal diameter of 15 mm.
- ➤ Connect the drain hose to the compact unit.
- ➤ Lay the drain hose with a downward slope. For long drain hoses, use a metal support if necessary to prevent the hose bending.
- ➤ Lay the drain hose so that closures or blockages cannot occur.
- ➤ Do not insert the drain hose in a waste water system from which aggressive gasses such as ammonia gas, sulphur gas etc. can escape.

7 Electrical installation

Danger!

The work may only be performed by qualified or certified personnel.

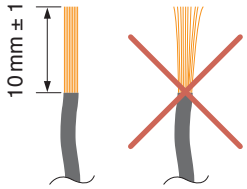
Ensure that you have disconnected the power supply before you perform installation work. Secure the power supply to prevent unintentional reactivation.

Ensure that all cables have the correct polarity. If this is not the case, electric shocks or fire can result.

Ensure that the cables can never come into contact with hot objects such as the water pipes. High temperatures can damage the insulation.

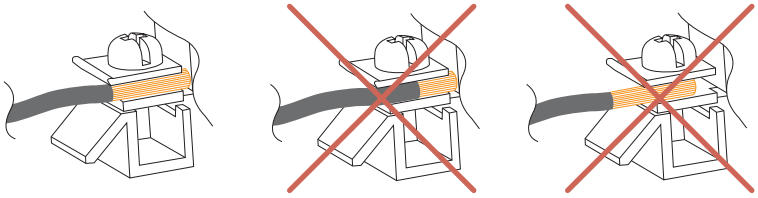
Observe the following specifications for installation:

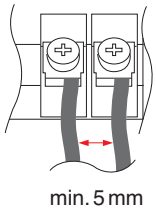
Correct **Incorrect**



The insulation must be at least 10 mm +/- 1 mm in length. Ensure that all strands are clamped.

Correct **Incorrect** **Incorrect**



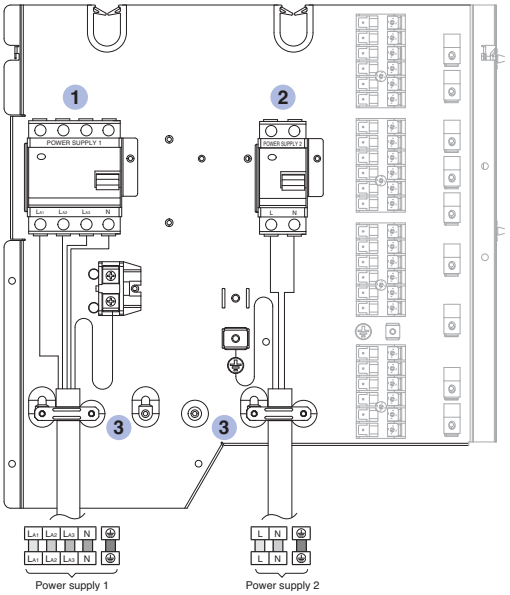


The clearance between the cables must be at least 5 mm.

Clamping screw connection	Tightening torque (NM)
M4	157–196
M5	196–245

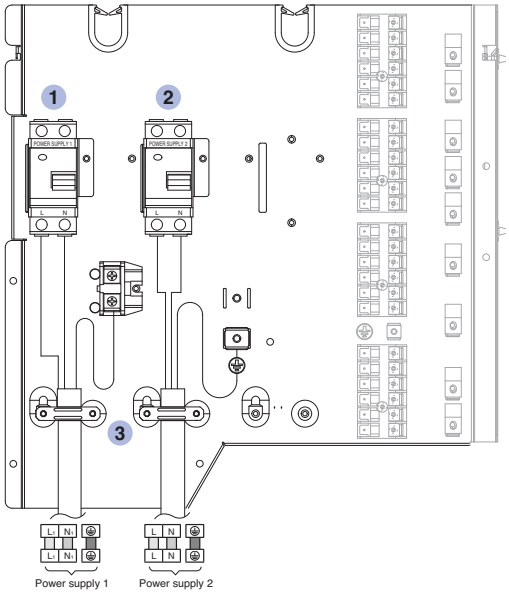
7.1 Mains connections

Mains connection for compact unit, 9 kW (three-phase)



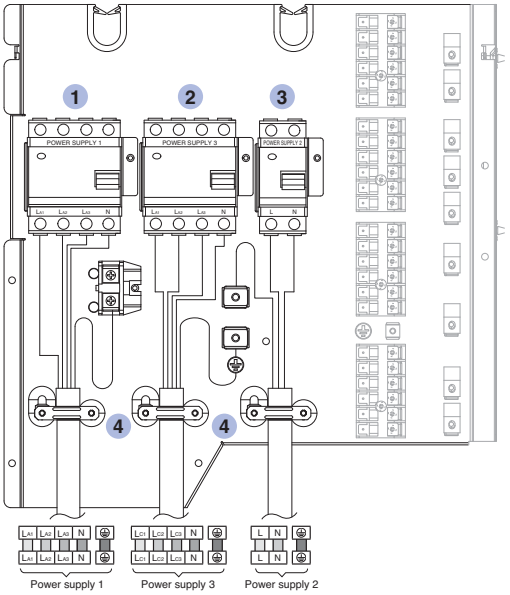
1. Compact unit and additional electric heater for heat pump
2. Electric immersion heater for hot-water tank
3. Strain relief

Mains connection for compact unit, 6 to 9 kW (single-phase)



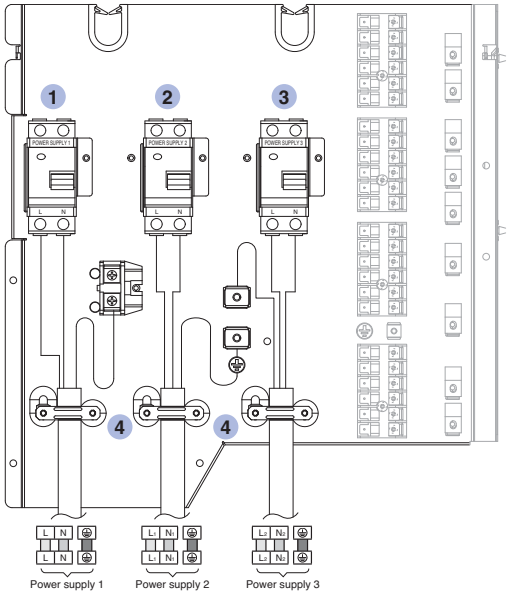
1. Compact unit
2. Additional electric heater for heat pump and electric immersion heater for hot-water tank
3. Strain relief

Mains connection for compact unit, 12 to 16 kW (three-phase)



1. Compact unit
2. Additional electric heater for heat pump
3. Electric immersion heater for hot-water tank
4. Strain relief

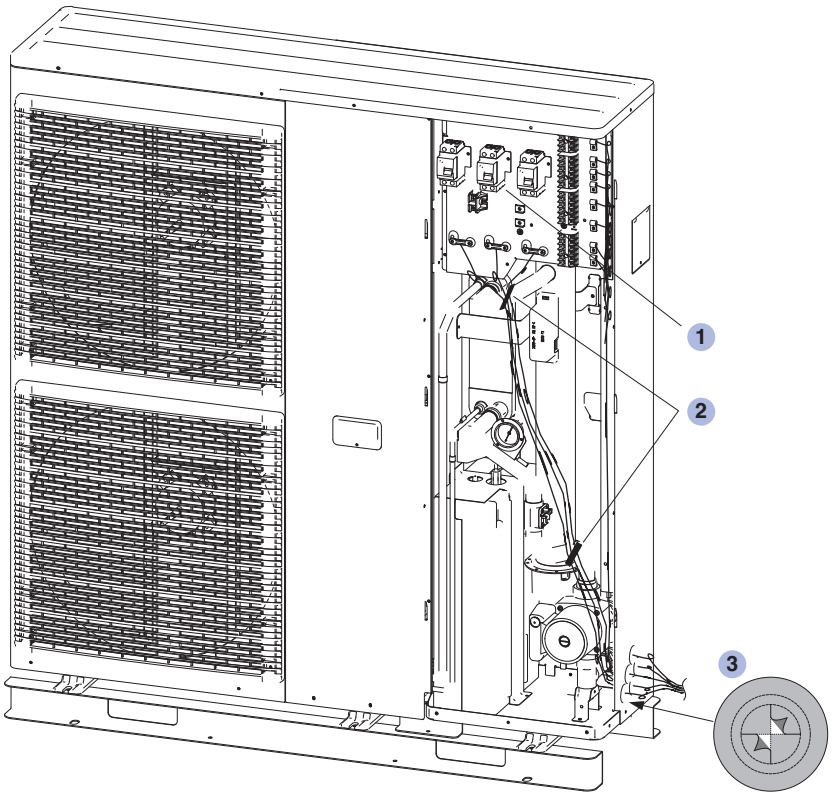
Mains connection for compact unit, 12 to 16 kW (single-phase)



1. Compact unit
2. Electric immersion heater for hot-water tank
3. Additional electric heater for heat pump
4. Strain relief

- Open the compact unit as described in Section 5.
- Use cables compliant with 60245 IEC 57 or thicker for the mains connections.

1. Mains connections
2. Cable ties
3. Cable gland



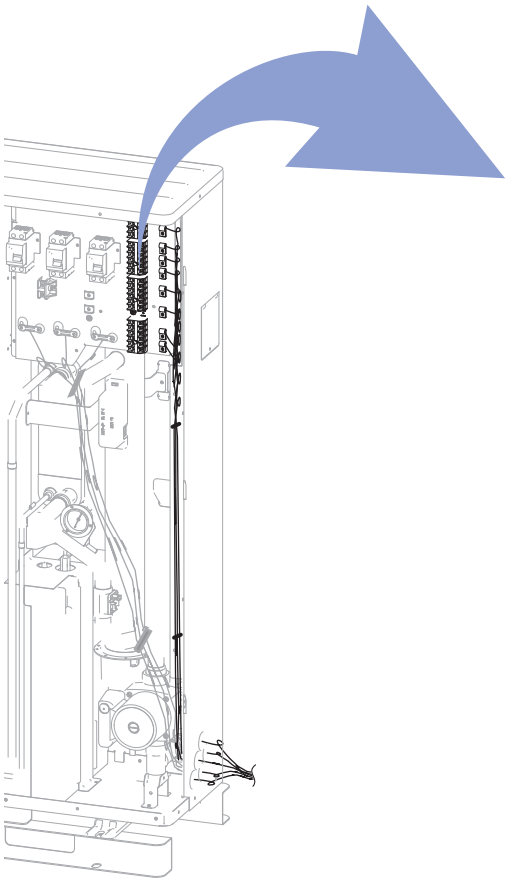
Laying the cables inside the device

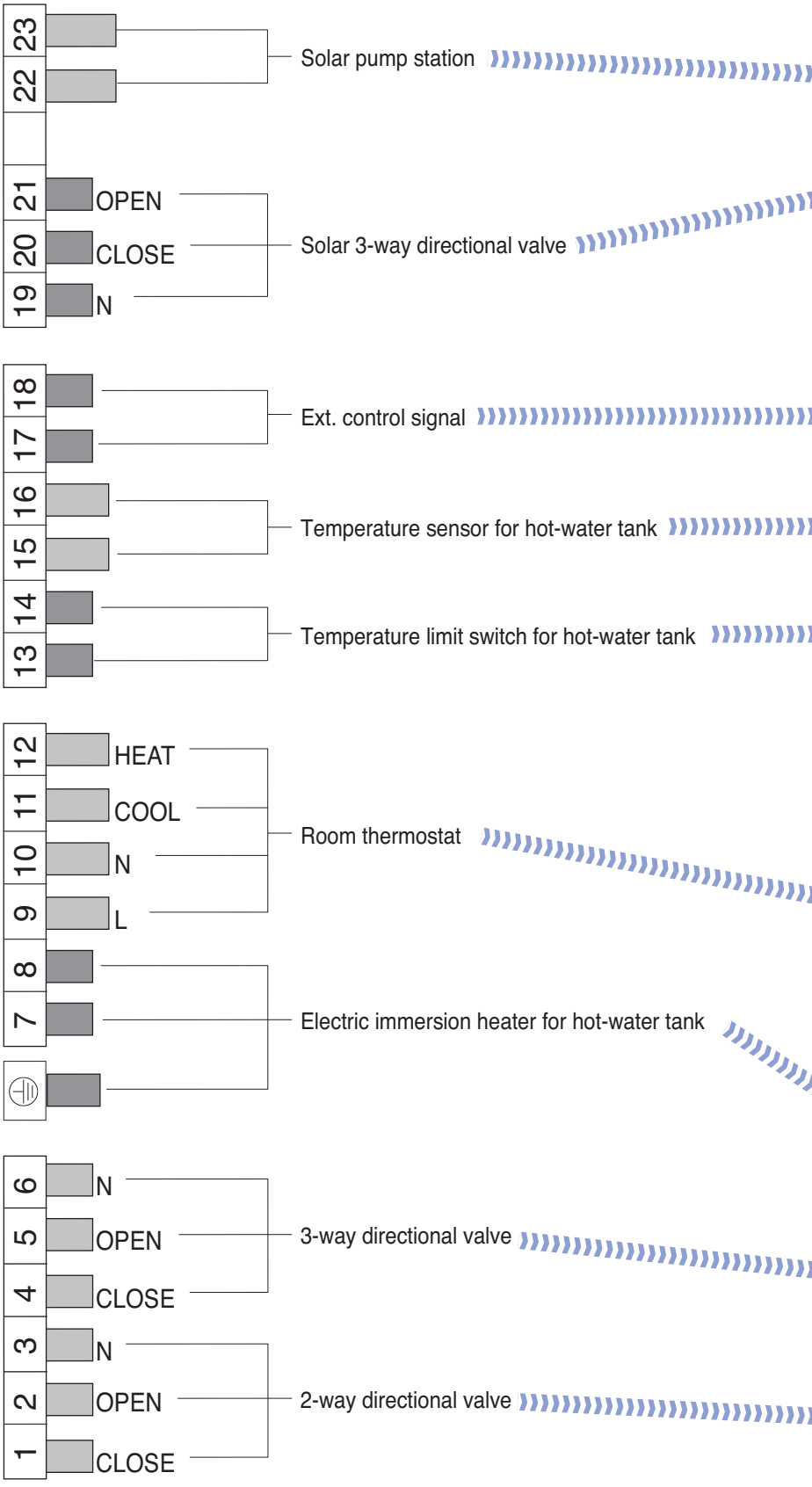
- Cut into the cable gland in a cross shape using a knife.
- Route the cables through the enclosed cable gland on the right side of the housing to prevent the cables being damaged by sharp edges.
- Connect the mains connection cable as shown in the diagrams. Ensure that the earthing cable is slightly longer than the other cables.
- Use the strain reliefs to secure the mains connection cables.
- Connect the other end of the mains connection cable to the fuses.

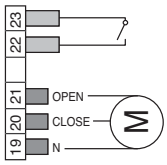
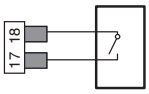
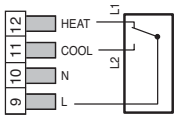
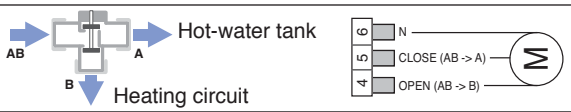
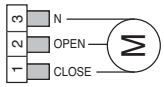
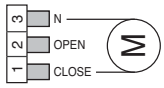
➤ Use the following fuses to protect the individual mains connections (isolating distance between the pins at least 3.0 mm each):

Device name	Fuse		
	Mains connection 1	Mains connection 2	Mains connection 3
WH-MDC09C3E8, WH-MDF09C3E8, WH-MXC09D3E8, WH-MXF09D3E8, WH-MHF09D3E8	20A	16A	–
WH-MDC12C9E8, WH-MDC14C9E8, WH-MDC16C9E8, WH-MDF12C9E8, WH-MDF14C9E8, WH-MDF16C9E8, WH-MXC12D9E8, WH-MXF12D9E8, WH-MHF12D9E8	20A	16A	16A
WH-MDF06E3E5, WH-MDC09C3E5, WH-MDF09C3E5, WH-MDF09E3E5, WH-MXC09D3E5, WH-MXF09D3E5, WH-MXC12D6E5, WH-MXF12D6E5, WH-MHF09D3E5	30A	30A	–
WH-MDC12C6E5, WH-MDC14C6E5, WH-MDC16C6E5, WH-MDF12C6E5, WH-MDF14C6E5, WH-MDF16C6E5, WH-MHF12D6E5	30A	30A	16A

7.2 Inputs and outputs (external interfaces)

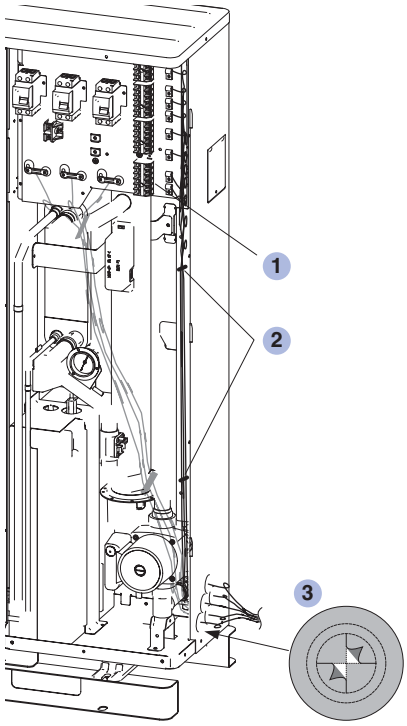




Terminals	Connection	Function	Comments	Number Cable
22 to 23	Solar pump station	Input of the ON signal from solar pump 2 (230 V AC)	Use additional circuit board CZ-NS1P, CZ-NS2P or CZ-NS3P Connect the 3-way directional valve so that it prevents flow through the solar circuit and heat exchanger of the hot-water tank when closed. 	2
19 to 21	Solar 3-way directional valve	Output for triggering the solar 3-way directional valve		3
17 to 18	Ext. control signal	Input for external control signal	These two terminals are jumpered on delivery. Connection: 1-pin (min. 3 mm contact clearance)  When the contacts are open, the device is switched off and the remote control is disabled. The jumper between terminal 17 and 18 must be removed, if the external control device (optional) is connected to the hydro module. The max. operating current of the control device must be less than 3 A_{ms}.	2
15 to 16	Temperature sensor for hot-water tank	Input for temperature sensor of the hot-water tank	Use an NTC sensor	2
13 to 14	Temperature limit switch for hot-water tank	Input for temperature limit switch of the hot-water tank	Terminals 13 / 14 must be jumpered if no temperature limit switch is used for the hot-water tank	2
9 to 12	Room thermostat	Input for external room thermostat	For exclusive control of heating mode via the external room thermostat, only phases L and L1 are connected to the terminal strip.  This also applies for devices without a cooling function. This connections do not permit switching between heating and cooling mode. **Condition** / **L/L1** / **L/L2** Room temperature > Target temperature / Circuit open (heating off) / Circuit closed (cooling on) Room temperature < Target temperature / Circuit closed (heating on) / Circuit open (cooling off) Operating mode heat pump / Heating / Cooling	4
Mass to 8	Electric immersion heater for hot-water tank	230 V output for activating / deactivating the electric immersion heater for hot-water storage tanks	The maximum output capacity of the electric immersion heater for hot-water storage tanks should not exceed 3 kW	3
4 to 6	3-way directional valve	230 V output for control of the 3-way directional valve (e.g. for heating, hot-water tank)		3
1 to 3	2-way directional valve	230 V output for controlling the 2-way directional valve (e.g. for floor heating, cooling)	Connection on automatic deactivation of heating circuits in cooling mode via a 2-way directional valve  Top: Motorised 2-way directional valve Bottom: Spring-loaded 2-way directional valve, normally open 	3

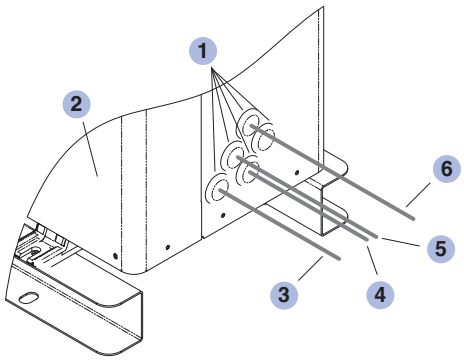
Terminal strip and table of inputs and outputs with functions

1 Terminal strip
2 Cable ties
3 Cable gland



Laying the cables inside the device

1 Cable gland
2 Chamber front panel
3 Power supply (3-core or 5-core for three-phase 400 V compact units)
4 Cable for 3-way directional valve (3-core)
5 Cable for 2-way directional valve (3-core)
6 Optional cable



Laying the cable into the device

Note
The outside temperature sensor is in the compact unit and does not have to be installed or connected as the measurements are transferred via an internal connection.

- If necessary, open the compact unit as described in Section 5.
- Cut into the cable gland in a cross shape using a knife.
- Route the cables through the enclosed cable gland on the right side of the housing to prevent the cables being damaged by sharp edges.
- Connect the cables to the terminal strips as in the above overviews. Make sure you use the correct connections.
- Secure the cable using adhesive tape and cable ties as shown in the figure. Ensure that the cables cannot come into contact with hot device parts.

7.3 Installing the wired remote control

Warning!

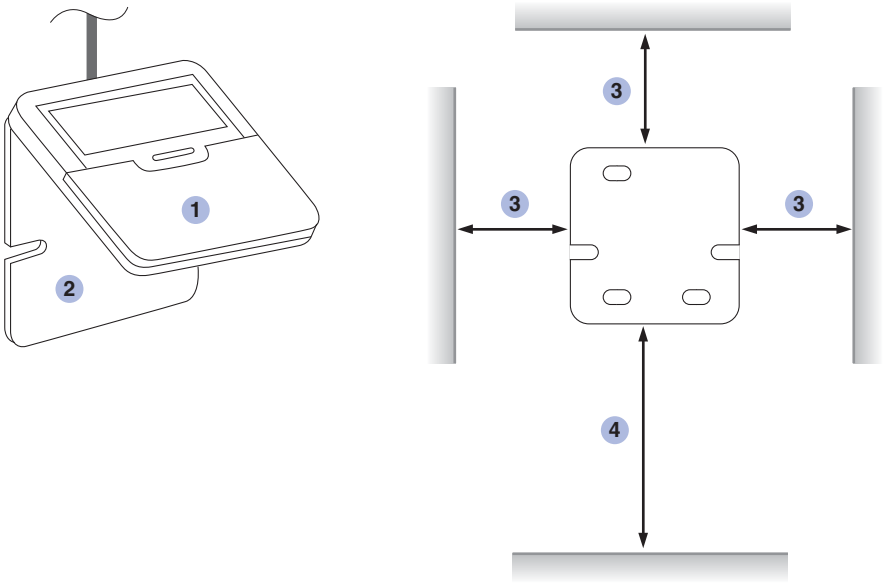
Please follow these instructions to prevent damage and problems:

- Do not change the length of the cable for the wired remote control.
- Install the wired remote control cable at least 5 cm away from other electric cables.
- Do not install the wired remote control cable in the immediate vicinity of water or condensate pipes.
- The installation location must be dry.
- The wired remote control must be installed so that it is not exposed to direct sunlight.
- Mount the wired remote control in as level a location as possible to prevent the wired remote control bending.
- Observe the minimum clearances as shown in the following diagram:

Component	Quantity	Comment
Remote control	1	
Remote control cable	1	15 m long
Screw (M4 × 30 mm machine screw)	3	For installing the remote control on an outlet (embedded connection cable)
Screw (M4 × 14 mm self-tapping screw)	3	Installing the remote control on the wall (exterior connection cable)

Included accessories

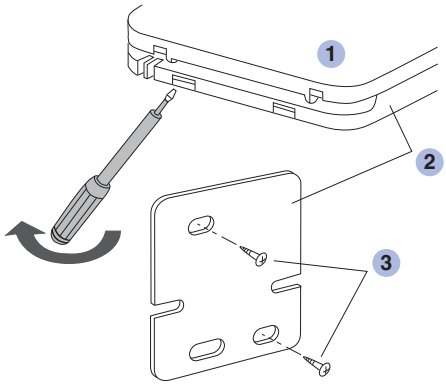
1 Upper cover
2 Lower cover
3 Clearance 30 mm
4 Clearance 120 mm



Minimum clearances to be observed for the wired remote control

➤ If necessary, open the compact unit as described in Section 5.

1 Upper cover
2 Lower cover
3 Screw, M4×30 or M4×14



Opening the wired remote control

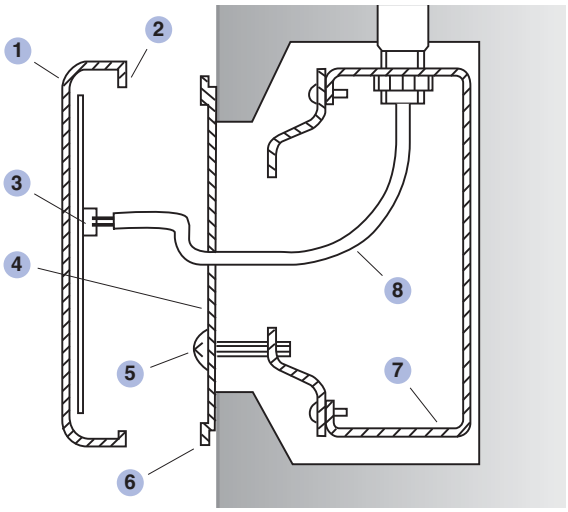
➤ Remove the lower cover of the wired remote control by placing a flat-head screwdriver or similar tool in the lower slots and carefully levering the upper and lower covers apart. Ensure that you don't damage the housing.

➤ Remove the lower cover. Ensure that the protective tape between the circuit board and the upper cover is not removed.

You can lay the wired remote control cable so that it is concealed or visible:

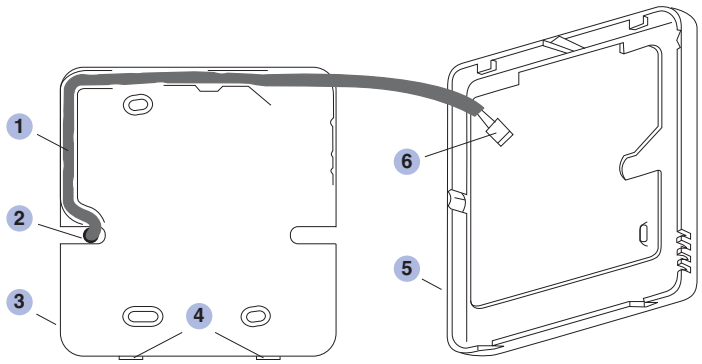
7.3.1 Laying concealed cables

1. Upper cover
2. Upper clamp
3. Plug connector (CON1)
4. Lower cover
5. Screw
6. Lower clamp
7. Flush-mounted box
8. Remote control cable



Laying concealed cables

1. Upper cover
2. Cable outlet to the rear
3. Lower cover
4. Tabs
5. Upper cover
6. Cable connection (CON1)



Laying cables in the wired remote control

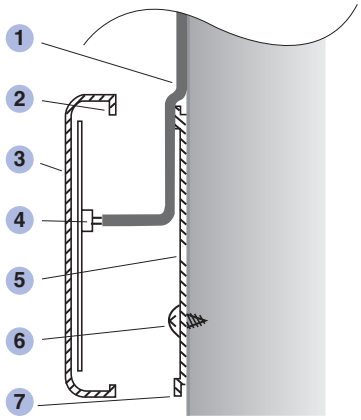
⚠ Danger!
Lay the cable as shown in the figure above so that the housing of the wired remote control can be closed securely.

⚠ Warning!
In cavity walls, use a bushing for the wired remote control cable to prevent rodents biting the wire.

- Insert a flush-mounted box (to be provided by the customer) into the wall (medium-sized rectangular socket, **Panasonic** part no. DS3744 or similar).
- Insert the wired remote control cable into the socket.
- Route the concealed wired remote control cable to the wired remote control as shown in the figure.
- Use the two supplied M4×30 screws to fasten the lower cover of the remote control to the flush-mounted socket. Ensure that the lower cover is not under strain and do not tighten the screws excessively. Use only the supplied screws.
- Fasten the connection of the remote control cable to the plug connector (CON1) in the upper cover of the circuit board. Ensure that is securely attached.
- Secure the upper cover to the lower cover of the remote control using the clamps provided.

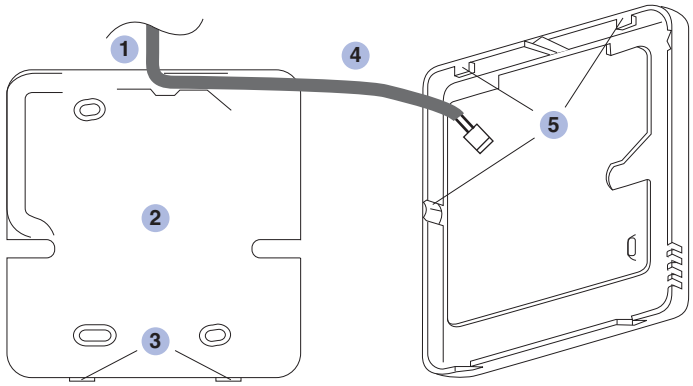
7.3.2 Laying visible cables

1. Remote control cable
2. Upper clamp
3. Upper cover
4. Plug connector (CON1)
5. Lower cover
6. Screw
7. Lower clamp



Laying visible cables

1. Cable outlet to the top
2. Lower cover
3. Tabs
4. Remote control cable
5. Notches



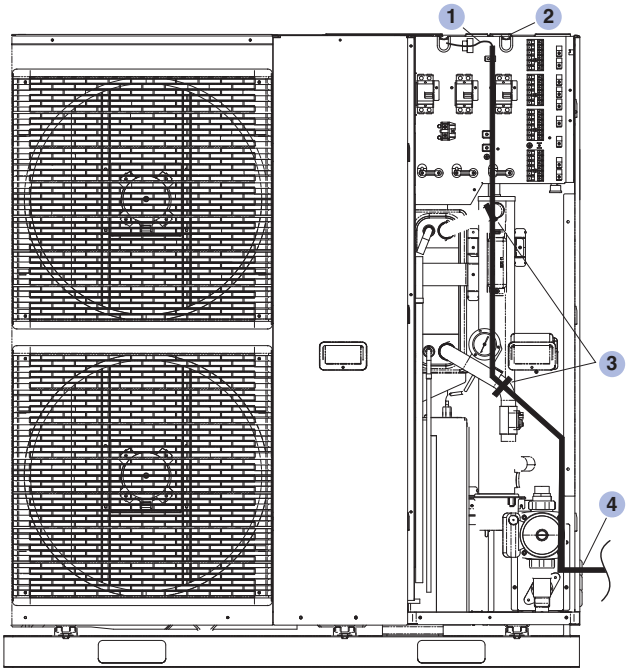
⚠ Danger!
Lay the cable as shown in the figure above so that the housing of the remote control can be closed securely.

- ➤ Use the two supplied M4 × 14 screws to secure the lower cover of the remote control to the wall. When tightening the screws, ensure that the screw heads not sitting proud. Use only the supplied screws.
- ➤ Select an outlet direction of your choice for the remote control cable and use a wire cutter to open one of the notches provided for this purpose in the upper cover in accordance with the outlet direction.
- ➤ Route the remote control cable in the lower cover as shown in the figure based on the outlet direction selected.
- ➤ Fasten the connection of the remote control cable to the plug connector (CON1) in the upper cover of the circuit board. Ensure that is securely attached.
- ➤ Secure the cover to the lower cover of the remote control using the clamps provided.

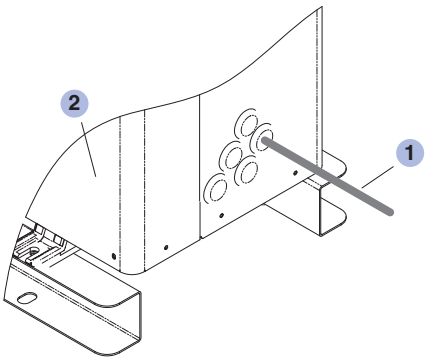
7.3.3 Connection to the compact unit

➤ If necessary, open the compact unit as described in Section 5.

1 Remote control cable
2 CNREMOTE2 connection
3 Cable ties
4 Cable gland



1 Remote control cable
2 Chamber front panel



Laying the cable into the device

➤ Cut into the cable gland in a cross shape using a knife.

➤ Route the cables through the enclosed cable gland on the right side of the housing to prevent the cables being damaged by sharp edges.

➤ Remove the dummy connection from the CN-REMOTE2 connection.

➤ Connect the wired remote control cable to the CN-REMOTE2 connection. Ensure it is attached securely.

➤ Secure the cable using cable ties as shown in the figure. Ensure that the cables cannot come into contact with hot device parts.

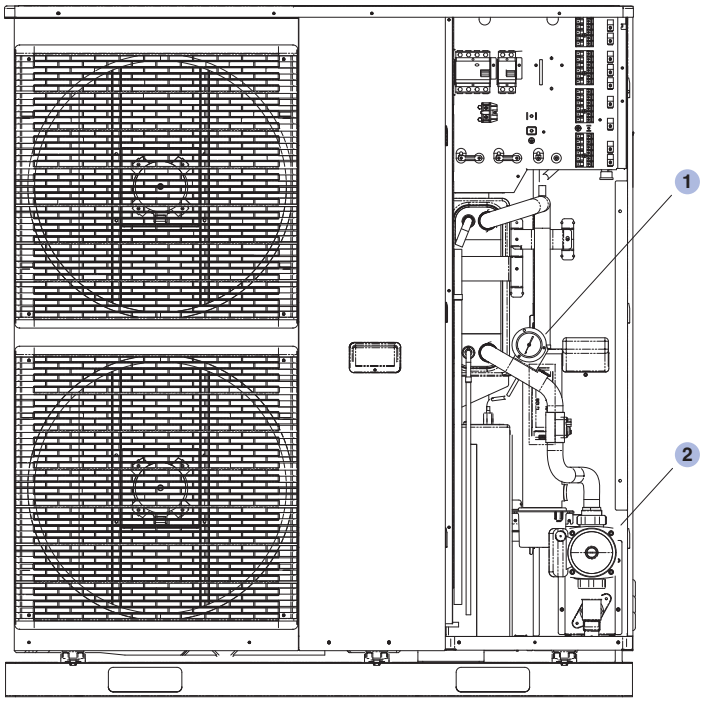
8 Commissioning

8.1 Commissioning

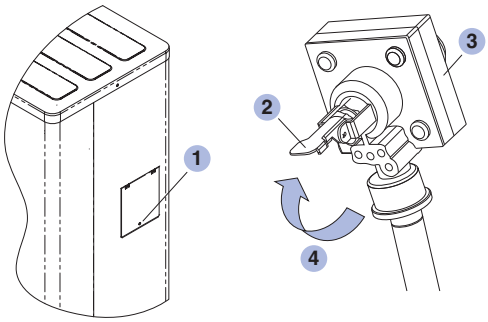
Danger!

Only qualified or certified personnel may work on the open device.
The device carries potentially fatal voltage when open.
Ensure that you do not touch any live device parts.

1. Manometer
2. Water recirculation pump (Figure shows standard pump)



1. Fastening screws
2. Lever
3. Pressure relief valve
4. Raise lever



Pressure relief valve

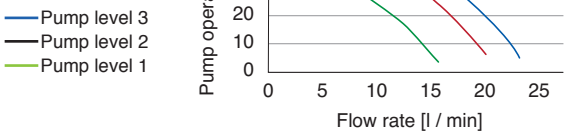
- ➤ Open the compact unit as described in Section 5.
- ➤ Vent the heating system. Proceed as follows to do so:
  - ➤ Loosen the fastening screws as shown in the figure and remove the cover.
  - ➤ Set the lever of the pressure relief valve to the horizontal position (open). The enclosed air can now escape.

- Return the lever of the pressure relief valve to the basic setting (closed) after a few seconds.
- Repeat the process until you can no longer hear air bubbles moving.
- Check the system pressure on the manometer. In normal operation, the system pressure should be between 0.5 bar and 3 bar. If necessary, set the target pressure.

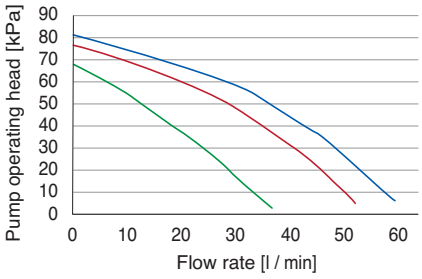
- Check the cooling circuit in the compact unit for leaks. Any leaks must be repaired.
- Perform a test run to ensure that no malfunctions occur after installation. Proceed as follows to do so:
  - Switch the RCD to ON.
  - Switch on the compact unit (OFF/ON button) on the operator control panel or wired remote control). See the next section for operation and programming.
  - Check the system pressure on the manometer again. In normal operation, the system pressure should be between 0.5 bar and 3 bar. If necessary, set the target pressure.
- Set the water circulation pump. Please note that settings differ for standard pumps and high efficiency pumps, as described in the two following sections.

Indication
Devices with high efficiency pumps are identified separately in the overview on page 5.

8.1.1 Setting the standard pump



Characteristic curve of the standard circulation pump for the Aquarea heat pump 7 and 9 kW, single-phase



Characteristic curve of the standard circulation pump of the Aquarea heat pumps 9 kW (three phase) and 12, 14 and 16 kW single and three-phase.

Warning!
Ensure that the minimum flow rate does not fall below 19 l/min or 10 l/min for Aquarea Mini compact devices.

- The circulation pump offers three speed levels. If necessary, set the circulation pump to a higher speed level (e.g. if the flow rate is too low) or a slower speed level (e.g. to decrease noise). If setting the speed of the circulation pump does not solve the problem, contact an authorised dealer.
- After the test run, clean the dirt trap (see Section 9.4).

8.1.2 Setting the high efficiency pump

⚠ Warning!
Hydraulic decoupling between the heat pump circuit and heat consumer circuit is always required when using Aquarea heat pumps with high efficiency pumps – overflow valves may not be used. If hydraulic decoupling is not implemented, the flow could fall below the minimum volume flow, which results in error messages on the heat pump. See also the instructions in the design handbook.

Note
As standard, the high efficiency pump is preset to control type Δ p-c, level 4. Panasonic recommends control type Δ p-c.

The high efficiency pumps in Aquarea heat pumps have two control types which can be set on the pump.

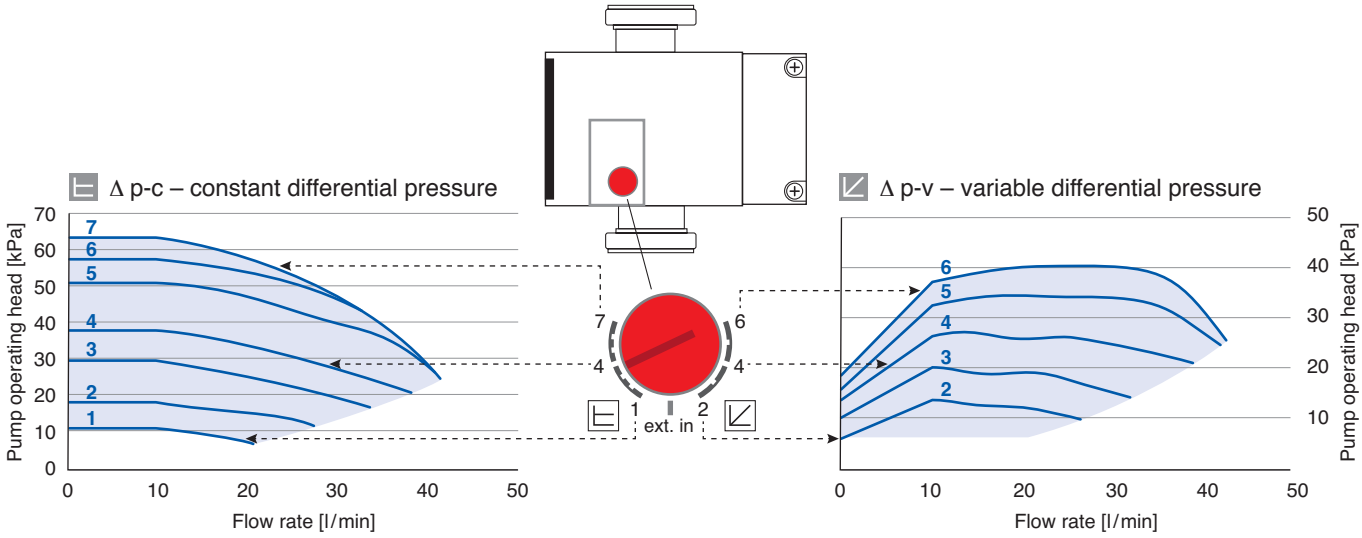
Δ p-c – constant differential pressure:

The electronic system **holds** the differential pressure target to be maintained by the pump at the value set (level 1 to 7) as per the curve below.

Δ p-v – variable differential pressure:

The electronic system **changes** the differential pressure target to be maintained by the pump (configurable between levels 2 to 6), whereby the differential pressure decreases simultaneously with the volume flow to max. half of the differential pressure target.

Set the pump level of the high efficiency pump by turning the red adjusting knob to ensure that the minimum volume flow is present.



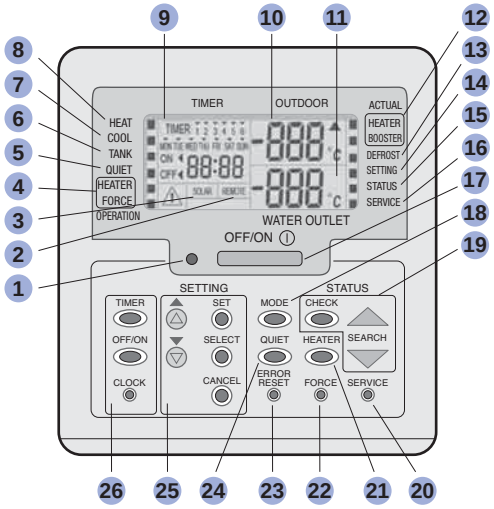
Pump characteristic curve of the high efficiency water circulation pump for the Aquarea Mini compact devices WH-MDF06E3E5 and WH-MDF09E3E5

8.1.3 Handover and instruction

- Complete the commissioning report (see Appendix). Check again that all installation work has been performed completely and correctly.
- Pass all documents to the end customer and instruct them to store the documents in a safe place. Explain to them how to operate the unit and sign the handover report and acceptance certificate (see Appendix) together with the customer.

8.2 Programming

Note
As the same operator control panel is used for different devices, some functions may not apply for your device.



Displays

1 Operation LED

2 Display of external room thermostat

3 Display of solar installation

4 Display of operation of additional electric heater for heat pump and emergency heating mode (ON/OFF)

5 Display for quiet mode (ON/OFF)

6 Hot-water tank operation display (ON/OFF)

7 Cooling operation display (ON/OFF) (The operator control panel of the SDF models has no display for cooling mode)

8 Heating operation display (ON/OFF)

9 Display of timer setting and time

10 Display of outside temperature

11 Display of water outlet temperature

12 Display of additional electric heater for the heat pump and the electric immersion heater for the hot-water tank (ON/OFF)

13 Display for defrosting (ON/OFF)

14 Display for system programming (ON/OFF)

15 Display for system status (ON/OFF)

16 Display for service (ON/OFF)

Button assignment

17 Operation button (ON/OFF)

18 Operating mode selection button
Use this button to select the operating mode required.

19 System status buttons
These buttons are used for a series of status queries. Proceed as follows:

➤ Press the CHECK button for 5 seconds to switch to Status mode.

➤ Press the UP or DOWN button to open the following values:
1. Compressor operating frequency
2. Error code
3. Water inlet temperature
4. Water tank temperature

➤ Press the CANCEL button or wait 30 seconds to quit Status mode.

20 Service button
This button takes you to menu items Sr:01 for pump down mode and Sr:02 for circulation pump. You can toggle between the two menu items using the SEARCH arrow buttons.

21 Button for enabling the additional electric heater for the heat pump. The additional electric heater can only be user if this button is pushed. Note: If this button is not pressed, the additional electric heater for the heat pump is only used for:
- Defrosting
- Device startup
- Frost protection mode

22 Emergency heating mode button
This button allows the device to be operated in emergency heating mode with the additional electric heater for the heat pump, e.g. if the heat pump is defective. Press the ON/OFF button to switch off emergency heating mode.

23 Error reset button

24 Quiet mode button

25 System programming buttons
These buttons are used to set temperature values.

26 Timer programming buttons
These buttons are used to set the time and the weekly timer.

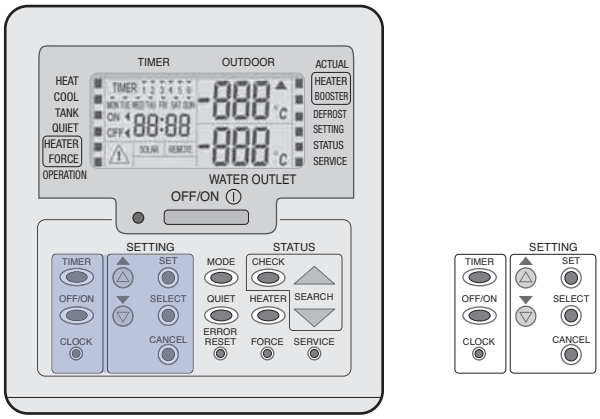
Setting the weekday and time

Note

The current weekday and time must be set when:

- the power supply is switched on for the first time,
- a long interruption to the power supply.

The current time set is the time basis for all timer functions.



➤ Set the weekday and time as follows:

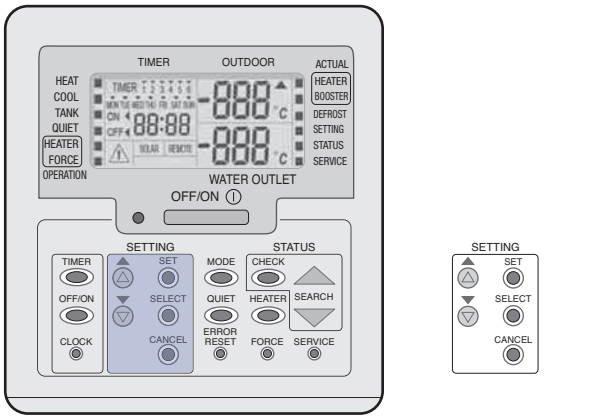
➤ Press the CLOCK button.

➤ Press the UP or DOWN button to set the current weekday.

➤ Press the SET button to confirm the setting.

➤ Repeat steps 2 and 3 to enter the current time.

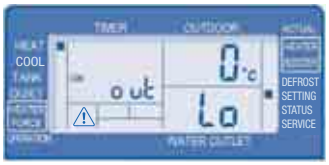
Setting the temperature values



➤ Set the temperature values as follows:

➤ Press the SET button for 5 seconds to switch to Setting mode.

➤ Press the UP or DOWN buttons to access the following 8 temperature parameters.



1. Low outside temperature (-15 to +15 °C, Std. 0 °C)

4. Water supply target temperature for heating mode at high outside temperature (25 to 55 °C, Std. 32 °C)

7. Water supply target temperature in cooling mode (5 to 20 °C, Std. +16 °C)

2. High outside temperature (-15 to +15 °C, Std. 15 °C)

5. Target temperature for switching off heating mode (limit heating temperature, 5 to 35 °C, Std. 24 °C)

8. Target temperature of the hot-water tank (40 to 75 °C, Std. +55 °C)

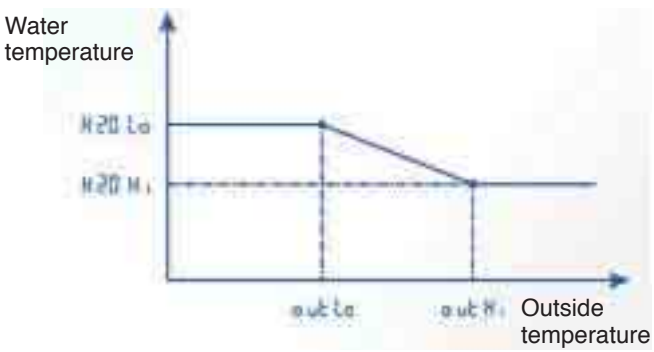
3. Water supply target temperature for heating mode at low outside temperature (25 to 55 °C, Std. 55 °C)

6. Outside temperature for switching on the additional electric heater (-15 to +20 °C, Std. 0 °C)

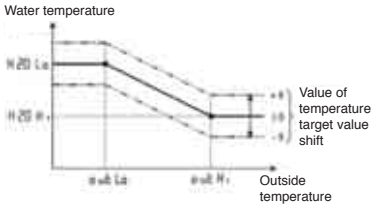
Note

No target temperatures can be entered for the water supply temperature in cooling mode on the operator control panel of the SDF versions.

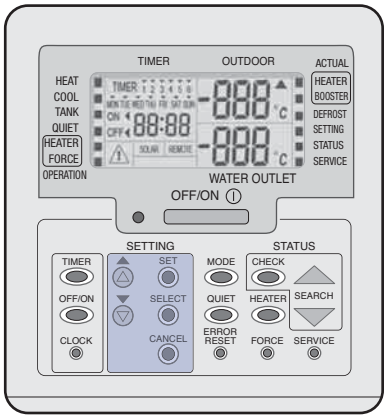
- Press the SELECT button to select the parameter.
- Use the UP or DOWN button to set the required temperature.
- Press the SET button to confirm the setting.
- Press the CANCEL button or wait 30 seconds to exit Setting mode.

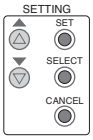


Weather compensation settings



out Lo	Low outside temperature
out Hi	High outside temperature
H_2O Lo	Water target temperature at low outside temperature
H_2O Lo	Water target temperature at high outside temperature

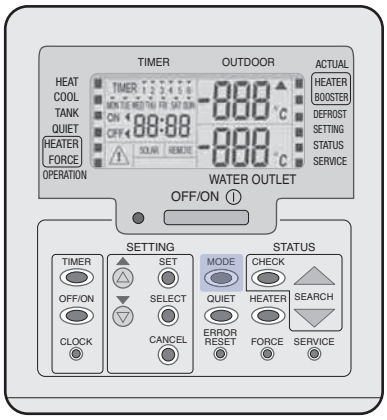




➤ Set the temperature shift as follows:

- ➤ Press the SET button (> 5 seconds).
  SETTING is shown on the display.
- ➤ Press the SELECT button to select the temperature shift.
- ➤ Use the UP or DOWN buttons to enter the required value (-5 to +5°C).
- ➤ Press the SET button to confirm the setting.
- ➤ Press the CANCEL button or wait 30 seconds to close the entry.

Setting the operating mode



➤ Set the operating mode as follows:

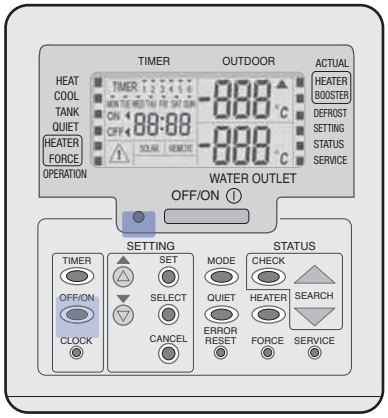
- ➤ Press the MODE button. The operating mode changes as follows every time the button is pressed:

SDF model: Heat → Heat + Tank → Tank

SDC model: Heat → Heat + Tank → Tank → Cool + Tank → Cool

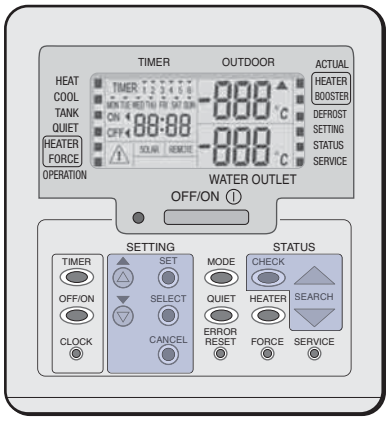
Setting special functions

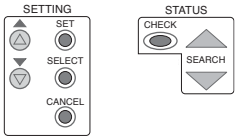
⚠ Danger!
During sterilisation, do not remove hot water, as this can lead to burns or overheating. The sterilisation function settings must be made by an authorised dealer in accordance with the local laws and guidelines.



➤ Switch the device off using the OFF/ON button before setting special functions (operation LED does not light up).

		Step	Display on operator control panel	Description
These menu items are only displayed if TANK is set to YES.		1	room con	External room thermostat (YES/NO, Standard: NO) Setting whether an external room thermostat is connected.
		2	HEATER CAP	Select the required output of the additional electric heater (3, 6 or 9 kW, Standard: Maximum). The output of the additional electric heater can be reduced if higher power is not needed. This will depend on model selected.
		3	Ant i FrE	Water antifreeze function (YES/NO, Standard: YES) Activation or deactivation of the antifreeze function when the device is switched off.
		4	TANK con	Connection of a hot-water tank (YES/NO, Standard: NO) Setting whether a hot-water tank is connected. Note: If “Hot-water tank connected” is set to NO, steps 5 to 14 are skipped.
		5	SOLAR Pry	Solar priority (YES/NO, Standard: NO) Setting the priority of the solar installation for water heating.
	Only displayed if HEAT PRIORITY is set to NO	6	HEAT Pry	Heating priority (YES/NO, Standard: NO) Setting the heating as a priority over hot water. Note: If “Heating priority” is set to YES, steps 7 to 8 are skipped.
		7	HEAT int	Duration of heating period Setting the duration of heating mode in the heating and water operating mode. (30 min. to 10 hours, Standard: 3 hours).
		8	TANK int	Water heating duration Setting the duration for water heating in the heating and water heating operating mode (5 min. to 1 hour 35 min., Standard: 30 min.).
		9	BOOSTER htr	Hot water immersion heating function (YES/NO, Standard: YES) Activation or deactivation of hot water immersion heater. Note: If the “Hot water immersion heating function” is set to NO, step 10 is skipped.
		10	BOOSTER dLy	Switch-on delay of the electric immersion heater for hot water Setting the delay period before the immersion heater is switched on for the hot-water tank if the tank temperature is not reached (20 min. to 1 hour 35 min., Standard: 1 hour).
	Sterilisation only appears if the TANK is set to YES.	11	Strl Fun	Sterilisation (YES/NO, Standard: YES) Setting for sterilisation of the hot water. Note: If “Heating priority” is set to YES, steps 12 to 14 are skipped.
		12	Str	Day and time of sterilisation (Standard: Monday 12:00 noon) Setting the day and time of weekly sterilisation (even when the device is switched off).
		13	Strl boi	Sterilisation temperature Setting the temperature to be used for sterilisation (40 to 75 °C, Standard: 70 °C).
		14	Str oPr	Sterilisation duration Setting of the period required to retain the tank temperature needed for sterilisation (5 min. to 1 hour, Standard 10 min.).



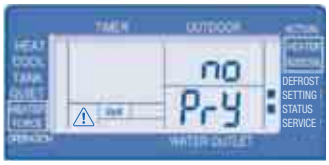


➤ Set the individual special functions as follows:

- ➤ Press the SET and CHECK buttons for 5 seconds to switch to Programming mode for the special settings. The SETTING (programming) and STATUS displays (system status) are shown.
- ➤ Use the UP or DOWN buttons to toggle through the functions.
- ➤ Press the SELECT button to access the settings for the respective function.
- ➤ Press the UP or DOWN buttons to activate (UP) or deactivate (DOWN) the functions, or to set the time and weekday.
- ➤ Press the SET button to confirm the setting.

1. Connection of a room thermostat (YES/NO, Standard: NO)

3. Water antifreeze function (YES/NO, Standard: YES)



5. Solar priority (YES/NO, Standard: NO) If a solar thermal system is used, this value should always be set to YES.

2. Select the required output of the additional electric heater (3, 6 or 9 kW, Standard: Maximum)

4. Connection of a hot-water tank (YES/NO, Standard: NO)

6. Heating priority (YES/NO, Standard: NO). If possible, this value should be left as NO, as otherwise hot water is only heated with the electric immersion heater.

7. Duration of heating period (30 min to 10 hours, Standard: 3 hours). Setting the duration for heating mode in the heating and water heating operating mode.

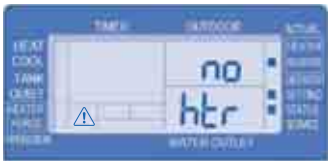
10. Switch-on delay of the electric immersion heater for hot water (20 min to 1 hour 35 min , Standard: 1 hour) Setting the delay period before the immersion heating is switched on for the hot-water tank if the tank temperature is not reached

13. Sterilisation temperature (40 to 75 °C, Standard: 70 °C) Setting the temperature to be used for sterilisation.

8. Water heating duration (5 min to 1 hour 35 min, Standard: 30 min) Setting the duration for water heating in the heating and water heating operating mode

11. Sterilisation (YES/NO, Standard: YES) Setting for sterilisation of the hot water.

14. Sterilisation duration (5 min. to 1 hour, Standard: 10 min.) Setting the period required to retain the tank temperature required for sterilisation.

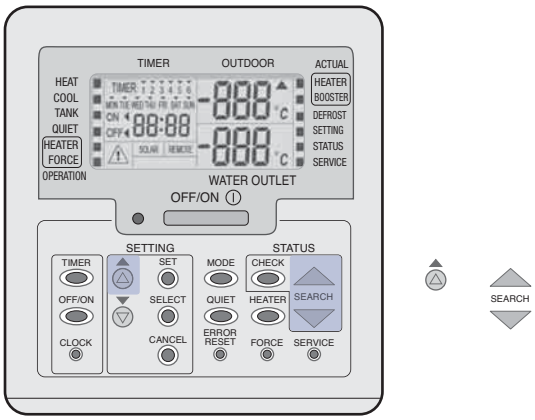


9. Hot water immersion heating function (YES/NO, Standard: NO)

12. Day and time of sterilisation (Standard: Monday 12:00 noon) Setting day and time of the weekly sterilisation.

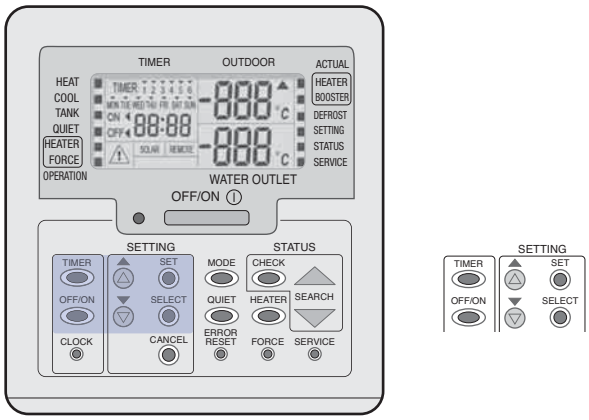
Reset to factory settings

Note
All settings are preserved in the event of a power failure (stored in EPROM). The weekday and time are buffered by a battery for roughly 36 hours, after which they must be set again.



➤ Press the three marked operating buttons simultaneously for 5 seconds to reset to the factory settings.

Setting the weekly timer



- Open the timer by pressing the TIMER button.
- Set the date and time.
  - Press the UP or DOWN button until the required weekday is displayed.
  - Press the SELECT button to confirm the setting.
  - “1” flashes on the display. Press the SELECT button to set Program 1.
  - Press the OFF/ON button to select the activation/deactivation timer.
  - Use the UP or DOWN buttons to set the required time.

    In addition to the switching time, you can also set other modes using the MODE or QUIET buttons.
  - Press the SET button to confirm Program 1. The weekday selected is identified with the ▼ symbol.

    After 2 seconds, the display switches to the next program.
  - Repeat the above steps, starting with the OFF/ON button, to set programs 2 to 6.

    If no buttons are pressed for 30 seconds during timer setting, or if you press the SET button, the current setting is saved and the setting process is closed.

Changing or adding timer programs

➤ Repeat the above-mentioned steps

Deactivating the timer

➤ Press the TIMER button, then the CANCEL button.

Activating the timer

➤ Press the TIMER button, then the SET button.

Checking the timer program

➤ Press the TIMER button.

➤ Press the UP or DOWN button until the required weekday is displayed.

➤ Press the SELECT button to confirm the setting.

➤ Press the UP or DOWN buttons to check the programs set.

Deleting timer programs

➤ Press the TIMER button.

➤ Press the UP or DOWN button until the required weekday is displayed.

➤ Press the SELECT button to access the program setting.

➤ Press the UP or DOWN button until the required weekday is displayed.

➤ Press the CANCEL button to delete the program setting.

9 Maintenance

⚠ Danger!
The maintenance work may only be performed by qualified or certified personnel.

The device carries potentially fatal voltage when open. Ensure that you have disconnected the power supply, if the maintenance steps require this, before you perform maintenance work.

➤ Open the compact unit as described in Section 5.

➤ The following maintenance steps must be performed annually:

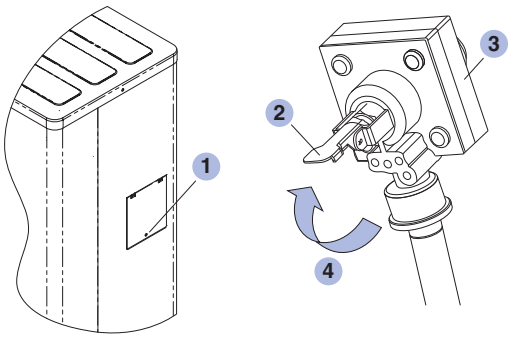
- Check water pressure
- Check pressure relief valve
- Visual inspection of circuit board
- Clean dirt trap
- Check RCD
- Check the quick vent

9.1 Checking the water pressure

➤ Check the system pressure on the manometer. If the system pressure is less than the target pressure, add liquid.

9.2 Checking the pressure relief valve

1. Fastening screws
2. Lever
3. Pressure relief valve
4. Raise lever



Pressure relief valve

➤ Open the fastening screws as shown in the figure.

➤ Check the function of the pressure relief valve by moving the lever of the pressure relief valve to the horizontal (open) position briefly. Escaping air or liquid must be clearly audible. If not, contact an authorised dealer.

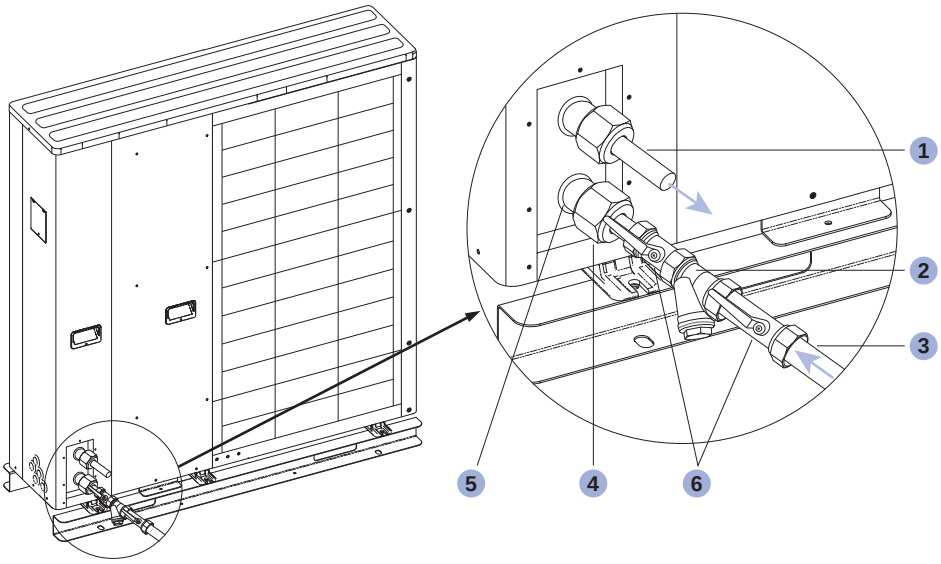
➤ Return the lever of the pressure relief valve to the basic setting (closed).

9.3 Visual inspection of the circuit board

➤ Visually inspect the circuit board for loose connections, damaged cable insulation etc.

9.4 Cleaning the dirt trap

1. Water outlet WATER OUT
2. Dirt trap
3. Water inlet WATER IN
4. Union nut
5. Connection
6. Shutoff valve



Position of the dirt trap

⚠ **Warning!**
Do not damage the mesh of the dirt trap.

➤ Where applicable, close the shutoff valves upstream and downstream of the dirt trap.

➤ Use a spanner to open the dirt trap.

➤ Remove the insert, ensuring not to damage the mesh of the insert.

➤ Rinse the insert with tap water. Use a soft brush to remove stubborn dirt.

➤ Replace the insert in the dirt trap and seal the dirt trap with the spanner.

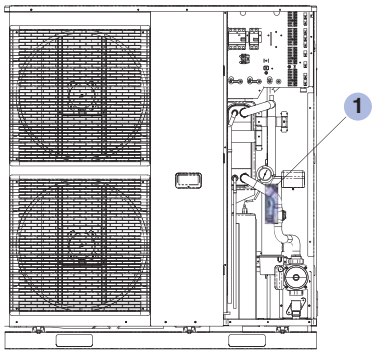
➤ If applicable, open the shutoff valves.

9.5 Checking the RCD

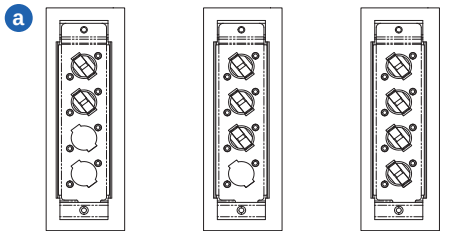
⚠ Danger!
The device carries potentially fatal voltage. Ensure that you do not touch any live device parts. Only touch the buttons of the RCD.

- ➤ If applicable, set the RCD to ON.
- ➤ Switch on the power supply of the compact unit.
- ➤ Press the TEST button on the RCD. The lever must move down to the OFF (green) position, if the RCD works properly. If not, contact an authorised dealer.
- ➤ Switch off the power supply of the compact unit.
- ➤ Set the lever of the RCD back to ON.

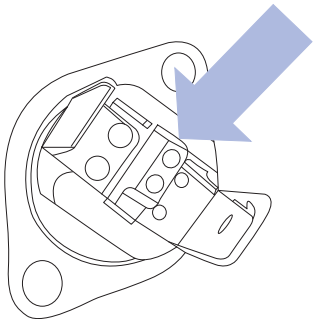
9.6 Resetting the temperature limit switch



1 Temperature limit switch (differs from model to model, see Detail A)



Single-phase, 9 kW | Single-phase, 12 to 16 kW | Three-phase 9 to 16 kW

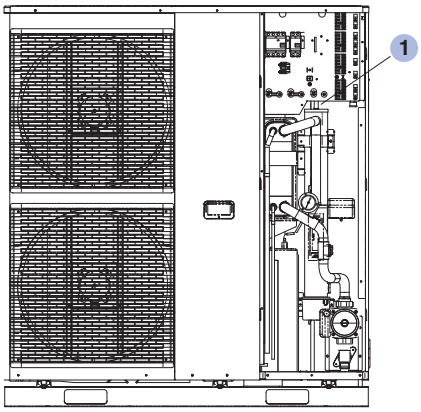


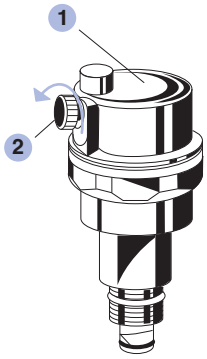
Resetting the temperature limit switch

- ➤ If the temperature limit switch was triggered at a high water temperature, perform the following steps to reset it:
  - ➤ Remove the cover.
  - ➤ Reset the temperature limit switch by pressing the middle button gently with a test pen.

9.7 Venting the system / Checking the quick vent

1 Quick vent





- Turn the valve cap on the quick vent one full turn counter-clockwise and allow any air in the heating system to escape until fluid flows out.
- Repeat the process until you can no longer hear air bubbles moving.
- Close the quick vent again by turning it clockwise.

1 Quick vent
2 Valve cap

10 Recycling

After the end of the product's service life, it must be disposed of appropriately. When disposing of the packaging, the device or individual components, please observe the local recycling regulations.

The respective environmental protection regulations must be observed.

11 Appendix

Commissioning report

Company name:	Panasonic ideas for life
System operator:	Order number:
	Machine type:
	Serial number:
Buyer / Invoice address	Refrigerant:
	Fill quantity:

Hydraulic system			
Supply / return connected correctly	☐ Yes ☐ No	System flushed and vented	☐ Yes ☐ No
Filter in return	☐ Yes ☐ No	Hydraulic compensation performed	☐ Yes ☐ No
Filter lockable	☐ Yes ☐ No	Expansion tank set	☐ Yes ☐ No
Directional valve set correctly		Input pressure in bar:	
AB return water	☐ Yes ☐ No		
B to tank	☐ Yes ☐ No	System depressurised	☐ Yes ☐ No
A to heating	☐ Yes ☐ No	**Electrical connections**	
2-way directional valve installed correctly	☐ Yes ☐ No	Mains connection 1	
Storage tank / vessel	☐ Yes ☐ No	Connected	☐ Yes ☐ No
Volume in l:		Cable cross-section in mm²:	
Water circulation pump set	☐ Yes ☐ No	Mains connection 2	
Pump level:		Connected	☐ Yes ☐ No
Control type (for high efficiency pumps only):		Cable cross-section in mm²:	
Hydraulic switch / decoupling	☐ Yes ☐ No		
Hot-water tank installed	☐ Yes ☐ No		
Type:			
Volume in l:			
With solar integration	☐ Yes ☐ No		

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Electrical connections	
Mains connection 3 connected Cable cross-section in mm²:	☐ Yes ☐ No
2-way directional valve connected Terminals 1/2/3	☐ Yes ☐ No
3-way directional valve connected Terminals 4/5/6	☐ Yes ☐ No
Electric immersion heater for hot-water tank connected Terminals 7/8 + earth, 3 kW max. output	☐ Yes ☐ No
Room thermostat connected Terminals 9/10/11/12	☐ Yes ☐ No
OLP hot-water tank connected Terminals 13/14 Programming: Connection of hot-water tank to Yes **Important:** If the hot-water tank is connected to Yes and no OLP is used, then jumper terminals 13/14	☐ Yes ☐ No
Hot-water tank connected Terminals 15/16 Programming: Connection of hot-water tank to Yes	☐ Yes ☐ No
Ext. control signal connected Remove jumper from terminals 17/18!	☐ Yes ☐ No
Solar 3-way directional valve connected Terminals 19/20/21 Programming: Connection of hot-water tank to Yes	☐ Yes ☐ No
Solar pump station connected Terminals 22/23	☐ Yes ☐ No
Compact unit installation	
Can condensation drain freely?	☐ Yes ☐ No
Are all minimum clearances observed?	☐ Yes ☐ No

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Parameter list

Low outside temperature Out Lo in °C	**Function** **Operating mode/ Operating display**
High outside temperature Out Hi in °C	Pry HEAT Heating priority ☐Yes ☐No
Water supply target temperature at out Lo H_2O Lo in °C	Note: Setting heating priority over hot water heating
Water supply target temperature at out Hi H_2O Hi in °C	int HEAT Duration of heating in heating and hot water mode in hours
Target temp. to deactivate heating mode Heating limit temperature in °C	int TANK Duration of hot water heating in heating and hot water mode in h
Outside temperature for activating the additional electric heater in °C	Booster htr Water heating ☐Yes ☐No
Water supply target temperature in cooling mode in °C	dly BOOSTER Switch-on delay for electric immersion heater for hot-water tank in hours
Target temperature of the hot-water tank in °C	Fun StrL Sterilisation ☐Yes ☐No
Function **Operating mode / Operating display**	Str Day and time of sterilisation
con room External room thermostat ☐Yes ☐No	boi StrL Sterilisation temperature in °C Note: At sterilisation temperatures over 55 °C, the electric immersion heater for the hot-water tank is always used
Heater cap Selection of the output of the additional electric heater for the heat pump ☐ 3 kW ☐ 6 kW ☐ 9 kW	oPr Str Sterilisation period in min
con TANK Connection of hot-water tank ☐Yes ☐No	The parameters from **Pry on** are only shown if **TANK is set to Yes** The parameters **int to dly** are only shown if **Heating priority is set to No** The parameters **Fun to oPr** are only for **configuring sterilisation**
Pry SOLAR Solar priority ☐Yes ☐No Note: Set to Yes where possible, as otherwise the service water is mainly heated by the heat pump instead of solar thermal energy	Pump level
	Level 1 ☐Yes ☐No
	Level 2 ☐Yes ☐No
	Level 3 ☐Yes ☐No

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Measurement report in heating mode after 20 min. runtime	
Evaporation pressure in bar	Machine voltage in V L1-L2 in V L1-L3 in V L2-L3
Evaporation temperature in °C	
Suction gas temperature in °C	Compressor current consumption in A L1 in A L2 in A L3
Overheating in K	
Condensing pressure in bar	Additional electric heater for heat pump current consumption in A L1 in A L2 in A L3
Condensing temperature in °C	
Liquid temperature in °C	Electric immersion heater for hot-water tank current consumption in A L1
Compressor end temperature in °C	RCD test Mains connection 1 OK ☐ Yes ☐ No Mains connection 2 OK ☐ Yes ☐ No Mains connection 3 OK ☐ Yes ☐ No
Outside temperature in °C	
Evaporator air intake temperature in °C	Tank temperature in °C
Evaporator air outlet temperature in °C	Pressure drop in hydraulic system in bar
Condenser water inlet temperature in °C	High pressure switch triggers ☐ Yes ☐ No Switch-off point in bar Switch-on point in bar
Condenser water outlet temperature in °C	Low pressure switch triggers ☐ Yes ☐ No Switch-off point in bar Switch-on point in bar
	Flow rate cut-out triggers ☐ Yes ☐ No

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Measurement report in cooling mode after 20 min. runtime

Evaporation pressure in bar	Machine voltage in V L1-L2 in V L1-L3 in V L2-L3
Evaporation temperature in °C	
Suction gas temperature in °C	Compressor current consumption in A L1 in A L2 in A L3
Overheating in K	
Condensing pressure in bar	Faults found:
Condensing temperature in °C	
Liquid temperature in °C	
Compressor end temperature in °C	
Outside temperature in °C	
Condenser air intake temperature in °C	
Condenser air outlet temperature in °C	
Evaporator water inlet temperature in °C	
Evaporator water outlet temperature in °C	

Date	Customer signature	Contractor signature

Handover report

Company name:	Panasonic ideas for life
System operator:	Order number:
	Machine type:
	Serial number:
Buyer/Invoice address	Refrigerant:
Instruction completed with	**Confirmed by signature**
Mr	
Ms	
Mr	
Ms	
Instruction completed with:	
Place / Date / Name / Signature	

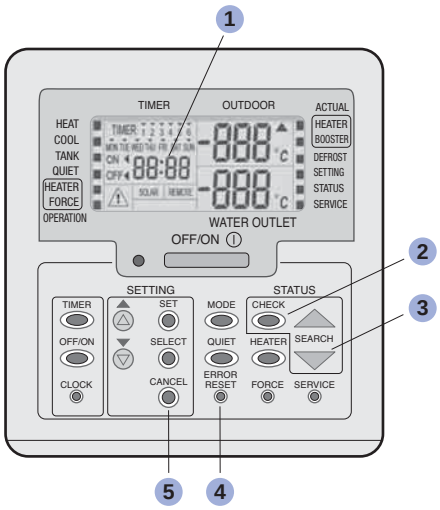
Acceptance certificate

Company name:	Panasonic ideas for life
System operator:	Order number:
	Machine type:
	Serial number:
Buyer/Invoice address	
We commissioned the above-mentioned system today, instructed the operating staff/owner and handed over the documentation. The system is free of faults and the warranty starts on today's date.	
Comments:	
Place	Date
Customer signature	Contractor signature

Error codes

Error code	Error/Protection triggered	Error recording
F12	Pressure switch triggered	4 times within 20 minutes
F14	Incorrect compressor speed	4 times within 20 minutes
F15	Incorrect speed of the outdoor unit fan	Twice within 30 minutes
F16	Protection against excessive total operating current	3 times within 20 minutes
F20	Compressor overheating guard	4 times within 30 minutes
F22	Power transistor module overheating guard	3 times within 30 minutes
F23	Direct current peaks in the outdoor unit	Occurred 7 times
F25	Problem switching between heating and cooling	4 times within 30 minutes
F27	Pressure switch	60 seconds long
F36	Outside temperature sensor	5 seconds long
F37	Return temperature sensor in indoor unit	5 seconds long
F40	Hot gas temperature sensor in the outdoor unit	5 seconds long
F41	PFC circuit	4 times within 10 minutes
F42	Temperature sensor of the heat exchanger in the outdoor unit	5 seconds long
F43	Outdoor unit defrosting temperature sensor	5 seconds long
F45	Supply temperature sensor in indoor unit	5 seconds long
F46	Current converter open in outdoor unit	–
F95	Cooling high pressure guard in outdoor unit	–
H12	Unsuitable output between the indoor and outdoor unit	90 seconds after supply of current
H15	Compressor temperature sensor	5 seconds long
H23	Liquid temperature sensor	5 seconds long
F24	Problems in the cooling circuit	Twice within 20 minutes
H42	Compressor low pressure	–
H62	Water-side flow rate cut-out	10 seconds long
H64	High-pressure sensor	5 seconds long
H70	OLP additional electric heater for heat pump	60 seconds long
H72	Hot water tank temperature sensor	5 seconds long
H76	Communication fields for operator control panel on indoor device	–
H90	Communication errors between indoor and outdoor unit	60 seconds after start of operation
H91	OLP electric immersion heater for hot-water tank	60 seconds long
H95	Indoor/outdoor unit incorrectly connected	–
H98	High pressure guard in outdoor unit	–
H99	Antifreeze for indoor unit heat exchanger	–

1 Display of system errors
2 CHECK button
3 SEARCH UP/DOWN buttons
4 Error reset button (ERROR RESET)
5 CANCEL button



If an error occurs during operation, the system stops, the OFF/ON LED flashes, and an error message is shown on the display. The error code is stored in the EEPROM of the indoor unit.

Acknowledging the error code

➤ Press and hold the ERROR RESET (< 8 seconds), until you hear a beep.

Reading the last error code stored in the EEPROM

➤ Press the CHECK button for 5 seconds to access Status mode.

➤ Press the SEARCH UP or DOWN button to see the last error code.

➤ Press the CANCEL button or wait 30 seconds to exit STATUS mode.

Deleting the last error code stored in the EEPROM

➤ Press and hold the ERROR RESET (> 8 seconds), until you hear a beep.

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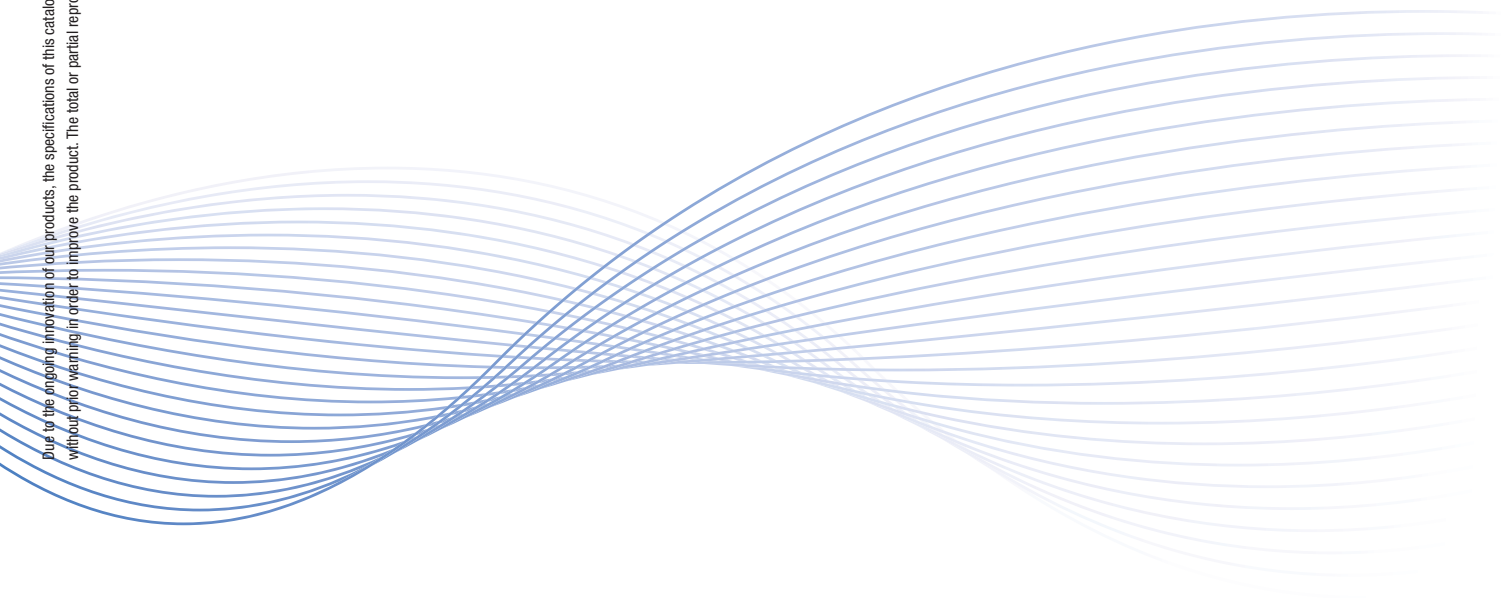

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